

الكفاءة فى قوارب الإنقاذ





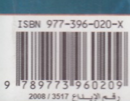
إعداد

الربان / إيهاب عتمان

الربان / على المغاورى

الربان / أحمد وائل

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قارب الإنقاذ

- تجهز سفن الركاب ذات الحمولة الكلية 500 أو أكثر بقارب إنقاذ واحد على الأقل على كل جانب , و سفن الركاب اللاتي تقل حمولتها الكلية عن 500 طن بقارب إنقاذ واحد على الأقل.
- تزود سفن الركاب (العبارات) بقارب إنقاذ على كل جانب علي أن يكون احد هذه القوارب قارب إنقاذ سريع.
- تجهز سفن البضائع ذات الحمولة الكلية أو أكثر500 بقارب إنقاذ واحد على الأقل ويمكن لقارب النجاة أن يحل محل قارب الإنقاذ إذا كان يفي بمتطلباته.
- يستخدم قارب الإنقاذ في عملية قطر و تجميع رماثات النجاة عند إخلاء السفينة , وكذلك في إنقاذ غريق بالبحر .

المتطلبات العامة لقارب الإنقاذ

1. يجب أن تفي قوارب الإنقاذ بالمتطلبات العامة لقوارب النجاة السابقة الذكر ويمكن لقارب النجاة أن يحل محل قارب الإنقاذ في حالة استيفاءه لاشتراطات قارب الإنقاذ.
2. يجب أن تبنى جميع قوارب الإنقاذ بناءا مناسبا فتكون شكلها وتصميمها بحيث يكفل لها أتزان طافي في البحر الهائج وذو ارتفاع حر كافي (المسافة الرأسية عن سطح البحر) ، وتكون ذات بدن قادر على المحافظة على الاتزان الموجب عند الإبحار في وضع معتدل في مياه هادئة ومحمل بكامل أشخاصه ومعداتهم، وبه فتح تحت خط الماء بافتراض أنه لم يحدث تلف أو فقد في مواد الطفو وكذلك لا يوجد ضرر آخر.



قارب الإنقاذ من النوع الصلب و التحكم في توجيه القارب بواسطة دومان

3. كل قارب إنقاذ يجب أن تثبت به شهادة الاعتماد.

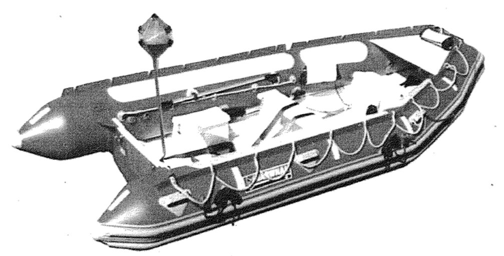
4. ينبغي أن تكون جميع قوارب الإنقاذ ذات قوة كافية لتحمل الآتي :

- إنزالها إلى الماء بسلام وهى بكامل حمولتها من الأشخاص والمعدات.
- إنزالها وسحبها (قطرها) أثناء سير السفينة بسرعة 5 عقدة في ماء هادئ.

5. يتحمل قارب الإنقاذ وهو بكامل حمولته الاصطدام الجانبي بجانب السفينة مع وجود الفراميلّ (الصدادات) مثبتة على أجناب القارب بسرعة 3.5 متر في الثانية، ويتحمل كذلك السقوط إلى الماء من ارتفاع قدره ثلاثة أمتار على الأقل.

6. يجب أن يكون للقارب قدرة ذاتية على الطفو أو أن يزود بخامات داخلية أو خارجية لتزويد القارب بالقدرة على الطفو , وهذه الخامات مصنوعة من مواد لا تتلف بسبب ماء البحر أو الزيوت.

7. يجوز أن تكون قوارب الإنقاذ ذات بناء صلب آو منفوخ، أو خليط من هذين النوعين (قوارب النجاة ذات بناء صلب فقط).



قارب الإنقاذ من النوع المنفوخ و أرضية صلبة

8. يشترط كذلك ألا يقل طولها عن 3.8 متر ولا يزيد عن 8.5 متر.

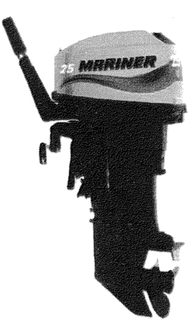
9. أن تكون قادرة على حمل ما لا يقل عن خمسة أشخاص جالسين وشخص واحد مستلقي.

10. إذا كان التقوس الطولي لزورق الإنقاذ غير كافيا فيجب تجهيزه بغطاء في المقدم يمتد لمسافة لا تقل عن 15% من طول القارب.

11. يجب أن تكون قادرة على المناورة بسرعة 6 عقدة و المحافظة على هذه السرعة لمدة لا تقل عن 4 ساعات.

12. يجب أن تكون حركة قوارب الإنقاذ وقدرتها على المناورة في البحر العالي كافية لتتمكن من التقاط الأشخاص من البحر وتجميع رماثات الإنقاذ، و قطر أكبر رماث من رماثات السفينة وهو محمل بكامل أشخاصه ومعداته بسرعة لا تقل عن 2 عقدة.

13. يجهز قارب الإنقاذ بمحرك داخلي أو خارجي (inboard engine or outboard motor) وفى حالة استخدام محرك خارجي يجوز أن تكون الدفة وذارع الدفة جزء منه وتكون خزانات الوقود محمية بشكل خاص من الحرائق والانفجار.



محرك خارجى وكذلك يستخدم فى التحكم فى توجيه القارب

14. يجب تجهيز القارب بتجهيزات دائمة للقطر وتكون ذات قوة تحمل كافية لتجميع و قطر رماثات الإنقاذ.

15. يجهز قارب الإنقاذ بوسيلة لتصريف المياه.

16. يجهز بمكان مانع لنفاذ المياه لتخزين المعدات الصغيرة به.

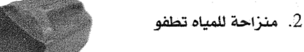
17. يجب تستيف قوارب الإنقاذ على سطح السفينة بحيث يمكن إنزال قارب لإنقاذ من وضع الاستعداد الدائم في أقل من خمس دقائق بطاقمه إلى سطح المياه.

معدات قوارب الإنقاذ

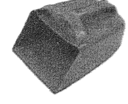
يجب تربيط معدات قارب الإنقاذ (ما عدا الغانجو boat-hooks) لاستعمالها في دفع القارب بعيداً عن جانب السفينة) بطريقة تضمن عدم عرقلة خطوات الإنزال أو الاستعادة، وتكون كذلك خفيفة الوزن صغيرة الحجم وتربط في مجموعات مناسبة مجمعة وتتكون هذه المعدات من الأتي :



1. عدد من المجاديف يكفى للسير في بحر هادئ، ويكون لكل مجداف مسند مربوط مع القارب بسلاسل.

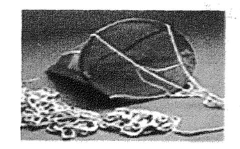


2. منزاحة للمياه تطفو

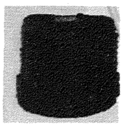




3. صندوق بوصلة يحتوى على بوصلة جيدة مضيئة أو مزودة بوسيلة أضاءه مناسبة.

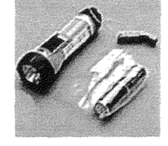


4. مخطاف ظهر بحر sea-anchor وحبل ذو قوة كافية ولا يقل طوله عن 10 متر.



5. حبل قوى ذو طول كافي (باروسة أمامية) موصل بوسيلة فصل في مقدمة القارب.

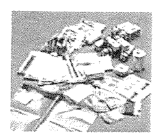
6. حبل للقطر مصنوع من مادة طافية لا يقل طوله عن 50 مترا وذو قوة يكفى لسحب أكبر رماث نجاة في السفينة.



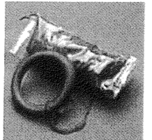
7. كشاف كهربائي ضد الماء يصلح لإعطاء إشارات المورس مع مجموعة بطاريات أضافية ولمبة أضافية في وعاء ضد الماء.



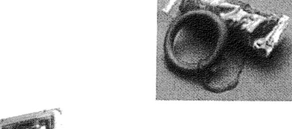
8. صفارة واحدة أو إشارة صوتية مماثلة



9. عدة إسعافات أولية في وعاء مانع لنفاذ الماء.

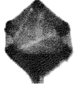


10. حلقتان إنقاذ من نوع طافي موصلتان بحبل لا يقل طوله عن 30 متر.



11. كشاف بحث قادر على إضاءة قطاع راسي وأفقي لا يقل عن 6 درجات لفترة متصلة لا تقل عن 3 ساعات وله شدة إضاءة لا تقل عن 2500 cd شمعة





12. عاكس ر دارى فعال.



13. مساعدة حماية حرارية لنسبة 10 % من عدد الأفراد أو فردين أيهما أكبر.



14. طفاية حريق متنقلة من نوع معتمد ومناسب لإطفاء حرائق الزيوت

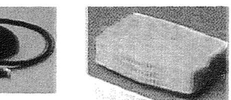
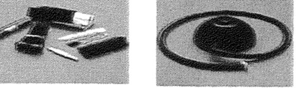
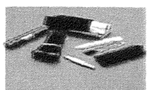
15. يزود كل قارب إنقاذ صلب بدلو وسكين وبلطة و غانجو(Boat- hook)







16.قارب الإنقاذ المنفوخ يزود بسكين طافي مأمون , عدد 2 إسفنجه , منفاخ أو مضخة يدوية فعالة , غانجو مأمو ,عدة إصلاح في وعاء مناسب لإصلاح آي ثقب.

متطلبات إضافية لزورق الإنقاذ المنفوخة

1. لا ينطبق على قوارب الإنقاذ المنفوخة أن تكون ضد الحريق وكذلك الحمل أكثر من الحمولة القصوى له في مثل قوارب النجاة.
2. يصمم قارب الإنقاذ بحيث عند تعليقه من الخطاف أو الصبان أن يستوفي المتطلبات التالية:

- تتوافر به القوة و الصلابة الكافية لإنزاله واستعادته وهو بكامل حمولته من الأفراد والمعدات.
- يتحمل وزن يعادل أربعه أضعاف حمولته من الأفراد والمعدات في درجة حرارة جوية قدرها 20 °C درجة ± 3 درجة مع تعطل جميع صمامات التنفيس.
- يتحمل وزن يساوى 1.1 من كامل حمولته من الأفراد والمعدات في درجة حرارة جوية قدرها -30C° درجة مع عمل جميع صمامات التنفيس.

3. تصمم بحيث تتحمل عوامل التعرية في أثناء تخزينها على سطح السفينة وكذلك ظروف البحر أثناء طفوها لمدة لا تقل عن 30 يوم.
4. يضاف للبيانات المكتوبة عليه الأتي رقم المسلسل وأسم جهة التصنيع أو العلامة التجارية وتاريخ الصنع.
5. تكون عملية إمداد القدرة على الطفو لقارب الإنقاذ المنفوخ عن طريق أنبوب مفرد مقسم إلى ما لا يقل عن خمس حجرات متساوية الحجم تقريبا، أو عن طريق أنبوبين منفصلين لا يزيد حجم أي منهما عن 60% من الحجم الإجمالي ويجب كذلك ترتيب أنابيب الطفو بحيث يضمن أنه أصيبت بعض حجراتها بالضرر و القارب بكامل حمولته من الأفراد (وزن كل منهم 75 كجم في المتوسط) موزعين في أماكنهم العادية والمعدات فأن الحجرات السليمة ستوفر للقارب ارتفاع حر موجب (Freeboard) تحت الظروف التالية :

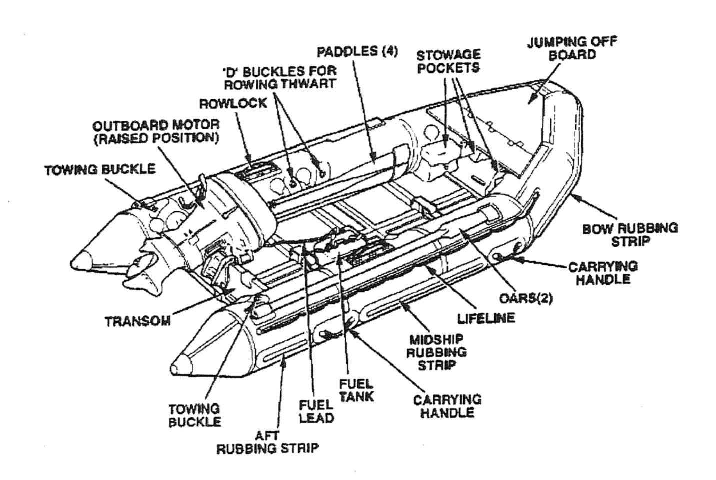
- القطاع الهوائي الأمامي فارغ من الهواء.
- أحد الجانبان فارغ من الهواء.
- في حالة وجود جانب فارغ من الهواء و كذلك القطاع الأمامي.

6. يجب أن توفر أنابيب الطفو التي تشكل حدود زورق الإنقاذ المنفوخ حجما لا يقل عن 0.17 متر مكعب عند النفخ لكل شخص من إجمالي حمولة القارب.

7. يجهز كل قطاع طفو بصمام غير رجاع لاستخدامه في النفخ اليدوي وبوسيلة للتنفيس، ويمكن تثبيت صمام أمان للتنفيس إذا وجدت الإدارة ضرورة لذلك.

8. يجب أن تثبت على القارب أشرطة لمقاومة الاحتكاك(Rubbing strips) وذلك أسفل القاعدة وعلى المواقع المعرضة لذلك من سطحه الخارجي.

9. في حالة تجهيز عارضة خلفية(Transom) فيجب ألا تغطى أكثر من 20% من الطول الكلى لقارب الإنقاذ.



شكل يوضح تجهيزات قارب الإنقاذ

10. يجب توفير نقاط خاصة لتثبيت البارومة(Painter) الأمامية والخلفية ، وكذلك وجود حبل الإنقاذ Lifelines على بدن القارب من الخارج والداخل (حبل السحب).

11. يجب حفظ زورق الإنقاذ المنفوخ دائما في حالة نفخ كامل.

قارب الإنقاذ السريع

المتطلبات العامة لقارب الإنقاذ السريع

1. قوارب الإنقاذ السريعة من الممكن أن تصنع من مواد صلبة أو قابلة للنفخ أو خليط من المنفوخ و الصلب.

2. طول القارب مناسب للغرض من استخدامه.

3. سعة القارب من الداخل تكفي لخمسة أفراد جالسين بالإضافة إلى شخص مستلقي على أرضية القارب.

4. قارب الإنقاذ السريع (Fast Rescue Boat) FRB يجب أن يكون ذاتي الاستعدال (Self Righting) أو قابل للاستعدال بواسطة طاقمه.

5. إذا كان التقوس الطولي لزورق الإنقاذ غير كافيا فيجب تجهيزه بغطاء في المقدم يمتد لمسافة لا تقل عن 15% من طول القارب.

6. قارب الإنقاذ السريع FRB له القدرة على المناورة لمدة لا تقل عن 4 ساعات بسرعة لا تقل عن 20 عقدة في ظروف البحر الهادئ ويكون له طاقم مؤهل لا يقل عن ثلاثة أفراد , و المناورة بسرعة لا تقل عن 8 عقدة عندما يكون محمل بكامل حمولته من الأفراد والمعدات.

7. قارب له القدرة الكافية على المناورة في ظروف البحر لاستعادة غريق من البحر , تجميع الرماثات و قطر أكبر رماثات السفينة وهو محمل بكامل أشخاصه ومعداته بسرعة لا تقل عن 2 عقدة.

8. يجهز قارب الإنقاذ بمحرك داخلي أو خارجي (inboard engine or outboard motor).

9. قارب الإنقاذ السريع يتم التحكم في توجيهه عن طريق دومان (Wheel) والذي يتحكم في الدفة عن بعد , وكذلك وسيلة توجيه معتمدة للطوارئ.

10. ومن الممكن أن يكون التحكم في التوجيه عن طريق المحرك الخارجي (بعد موافقة الإدارة البحرية) وكذلك خزانات الوقود تكون محمية بشكل خاص من الحرائق والانفجار.

11. محركات قوارب الإنقاذ السريعة يجب أن تجهز بحيث تقف أوتوماتيكي في حالة انقلاب القارب أو إيقافها عن طريق وسيلة الطوارئ المثبتة مع قائد القارب The Helmsman`s emergency release switch و بالطبع يمكن إعادة تشغيل الماكينة بعد استعدال القارب.

12. الكمية المفقودة من زيت التبريد او الوقود لا تتعدى 250مل بعد انقلاب القارب

13. يجب تجهيز القارب بتجهيزات دائمة للقطر وتكون ذات قوة تحمل كافية لتجميع و قطر رماثات الإنقاذ.

14. يجهز بمكان مانع لنفاذ المياه لتخزين المعدات الصغيرة به.

تداول قوارب الإنقاذ السريعة

قوارب الإنقاذ السريعة صالحة للإبحار وسهلة الإنزال . مع ذلك تحتاج إلى مستوى متميز من المهارات البحرية لتشغيلها , وتزيد فرصة الحوادث مع الأفراد عديمي الخبرة ومع غير المدربين . ويجب أن يلم طاقم القارب بالمعلومات التالية :

- المعرفة بمتطلبات وموصفات القارب (من خلال البرنامج التدريبي و تعليمات الصانع).
- تداول القارب في مياه ساكنة (البرنامج التدريبي و المناورات المنتظمة على سطح السفينة).
- تداول وتشغيل القارب في البحر المفتوح (عرض بحر) Open sea (البرنامج التدريبي و المناورات المنتظمة على سطح السفينة في بحر هادئ و تحت إشراف ضابط من ذوي الخبرة).

الثقة في النفس و مهارة أفراد الطاقم في القدرة على التحكم في القارب تكتسب خطوة بخطوة من خلال التدريب المنتظم على إنزال و قيادة القارب ويجب أن تتم مثل هذه التدريبات في ظروف البحر الهادئ وتحديد الهدف والمهارة المطلوب اكتسابها من كل تدريب.

تطقيم عائمات النجاة والاشراف عليها :

1. تطبق هذه القوانين والقواعد على جميع السفن.

2. يجب توافر عدد كافي من الأفراد المدربين من طاقم السفينة لتجميع الأفراد الغير مدربين ومساعدتهم.

3. يجب توافر عدد كافي من أفراد الطاقم سواء من ضباط الملاحة أو الأفراد المؤهلين على ظهر السفينة لتشغيل عائمات النجاة وتنفيذ تعليمات الإنزال اللازمة لكي يتم إخلاء السفينة من كل الأفراد الموجودين عليها.

4. تحديد ضباط الملاحة أو الأفراد المؤهلين المكلفين بمهمة الأشراف وقيادة كل عائمة من عائمات النجاة المستخدمة، ويجوز للإدارة مراعاة طبيعة الرحلة وعدد الأفراد على ظهر السفينة وكذلك خصائص السفينة للسماح للأفراد المدربين بتداول وتشغيل وقيادة رماثات النجاة بدلا من الأفراد المؤهلين، كما يتم تحديد الشخص التالي في القيادة لقوارب النجاة.

5. يجب على قائد عائمة النجاة الاحتفاظ بقائمة بأسماء طاقم العائمة ويتأكد من أن أفراد الطاقم العامل تحت قيادته يعرفون واجبا تهم ، أما بالنسبة لقوارب النجاة يجب على القائد الثاني كذلك الاحتفاظ بقائمة أسماء إضافية لطاقم قارب النجاة.

6. يجب أن يكون في كل قارب النجاة بمحرك شخص يستطيع تشغيل المحرك والقيام ببعض عمليات الإصلاح والضبط البسيط.

7. يجب على الربان التأكد من التوزيع الصحيح للأفراد المؤهلين والمدربين على جميع عائمات النجاة الموجودة.

الفرد المؤهل

هو الفرد الحاصل على شهادة كفاءة عائمات النجاة الصادرة تحت إشراف أو اعتراف السلطة البحرية طبقا لمتطلبات اتفاقية الدولية لمستويات التدريب و إصدار الشهادات للعاملين بالبحر
International Convention on Standards of Training, Certification and Watch keeping (STCW).

خطوات تحضير القارب والإنزال إلى سطح المياه والأستعادة

1. طاقم قارب الإنقاذ :

يتراوح عادة طاقم قارب الإنقاذ من ثلاثة أفراد إلى خمسة أفراد, و الحد الأدنى الآمن لمداولة القارب بطريقة جيدة لا يجب أن يقل عن ثلاثة أفراد مؤهلين بشهادة كفاءة العائمات, أما بالنسبة لطاقم قارب الإنقاذ السريع (FRB) يجب أن يدرب فردان عل الأقل من الطاقم تدريب خاص وأن يحصلا على شهادة كفاءة بمداولة قوارب الإنقاذ السريعة.

2. تجهيزات ومعدات السلامة الخاصة بطاقم القارب أثناء الإنزال :

- على أفراد طاقم قارب الإنقاذ ارتداء بدلات الغمر(Immersion suits) وسترات النجاة.
- جهاز لاسلكي نقال لتبادل المعلومات مع السفينة.
- في ظروف الطقس العاصف , سؤ حالة الرؤية ,الإظلام يفضل تجهيز قارب الإنقاذ بجهاز المجيب الراداري SART
- فحص القارب قبل الصعود إليه والمراجعة الدقيقة على مجموعة تعليق القارب طبقاً لتعليمات الصانع.
- تجهيز طوق نجاة مزود بحبل آمان جاهز للاستخدام الفوري من سطح الركوب.
- أثناء عملية إنزال القارب على جميع أفراد الطاقم أن يظلوا جالسين مع مراعاة تثبيت أنفسهم بالأيدي في حبل الأمان (السبحة) المثبتة في داخل القارب.

3. مهام الأفراد :

- قائد القارب(The coxswain) تتلخص مسؤوليته في التنسيق بين طاقم القارب في أداء مختلف المهام , الاتصالات , تشغيل الماكينة والتحكم في عملية توجيه القارب.
- فرد في مقدمة القارب مسئول عن حل البارومة الأمامية painter وخطاف تعليق القارب الأمامي (إذا كان للقارب نقطة تعليق أمامية و أخرى خلفية).

- فرد في مؤخرة القارب مسئول عن عملية فصل القارب من خطاف تعليق القارب (أو نقطة التعليق الخلفية) وكذلك البارومة الخلفية إن وجدت (عادة يجهز القارب بالبارومة الأمامية فقط في عملية الإنزال).
- مشغل الرافعة Davit Operator .

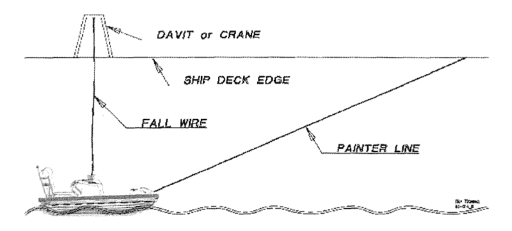
4. خطوات إنزال القارب :

- إزالة معدات التربيط الخاصة بالقارب و الغطاء المشمع Removing the lashing



إزالة معدات التربيط

- فصل المصدر الخارجي لشحن الكهرباء إن وجد لشحن الكهرباء إن وجد
- ربط حبل البارومة الأمامية Painter (و الخلفية إن وجدت) في نقطة مناسبة على السفينة والتأكد من أنه مثبت بالقارب بطريقة صحيحة بوحدة الفصل السريع, و طول حبل البارومة يكون مناسب بحيث القارب يكون أسفل الرافعة (البتافورة) Davit مباشرة عند وصوله لسطح البحر



شكل يوضح وضع حبل البارومة عند وصول القارب إلى سطح المياه

- في حالة كانت السفينة متحركة (making headway) يجب فصل نقطة تعليق القارب أولاً ثم بعد ذلك فصل حبل البارومة الأمامية. (ملحوظة : عدم استخدام البارومة نهائياً قد يعرض القارب للانقلاب)

- التأكد من نقطة تعليق القارب (آلية فصل القارب إن وجدت).

- صعود الطاقم إلى القارب مجهزين ببدل الغمر , سترات النجاة , وسيلة اتصال.

- تحريك القارب إلى خارج السفينة ثم البدء في إنزال القارب إلى سطح المياه عن طريق رفع ذراع الفرامل بعد التأكد من أن الطاقم موزعين بطريقة صحيحة , فرد مسئول عن التحكم في تسيير القارب و توجيه , فرد على البارومة الأمامية ,فرد مسئول عن فصل القارب من نقطة التعليق.



شكل يوضح طاقم القارب أثناء عملية الإنزال

- بعد إنزال القارب إلى سطح المياه يجب ترك الفرامل مرفوعة حتى يصبح سلك التعليق (Fall Wire) لا يوجد عليه أي حمل.

- ثم بعد ذلك يتم تشغيل الماكينة وفصل القارب من نقطة التعليق.

- دفع القارب بعيداً عن الجانب بواسطة الغانجو (Boat hook) وضع الماكينة بسرعة إلى الأمام وتوجيه القارب إلى الجانب الآخر.

- فصل البارومة الأمامية عن طريق آلية الفصل السريع المثبتة في المقدم.

5. استعادة القارب :

- المناورة بالقارب حتى يصبح قريب من حبل البارومة المتصل بالسفينة و تثبيته في مقدمة القارب و ترك القارب يتحرك مع البحر حتى يصبح حبل البارومة مشدود(محرب).

- عندما يصبح القارب أسفل سلك التعليق Falls مباشرة يتم تعليق صباني القارب و إيقاف الماكينة.

- يتم رفع القارب قليلاً عن سطح الماء لتأكد من أنه معلق بطريقة صحيحة ثم بعد ذلك رفع القارب و إعادته إلى موقعه الأصلي (يشترط في الرافعة الخاصة بالقارب أن تكون مزودة بموتور قادر على رفع القارب بكامل حمولته بسرعة لا تقل عن 0.35 متر /ثانية).

- المراجعة على جميع معدات القارب وجعله في حالة استعداد للإنزال مرة أخرى من مكان تستيفه.

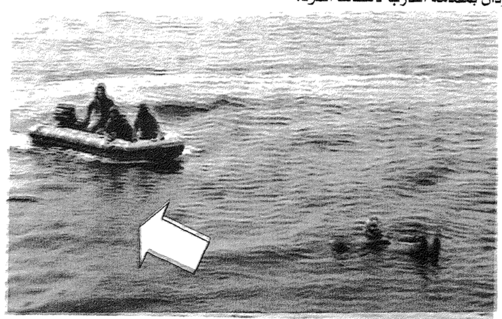
الاحتياطات الواجب اتخاذها عند التقاط فرد من المياه

1. يجب على قائد القارب تخطيط عملية الإنقاذ مع الوضع في الاعتبار اتجاه تسوح الفرد (Drifting) و اتجاه الرياح.

2. المناورة بالقارب من على مسافة آمنة حتى تصبح حركة تسوح الفرد في اتجاه القارب بزاوية مناسبة مع مقدم قارب الإنقاذ.

3. الاقتراب من الفرد مع تقليل سرعة الماكينة بحيث يكون الفرد فوق ريح القارب (تحت ريح الفرد Leeward) و ذلك لتجنب أن يعبر القارب فوق هذا الفرد في الرياح القوية.

4. استعداد فردان بمقدمة القارب لالتقاط الفرد.



شكل يوضح اقتراب القارب من الفرد مع توضيح اتجاه الرياح

5. إيقاف الماكينة(من الأفضل التوقف قبل مكان الفرد على عبوره ثم الدوران حول الفرد) و الاقتراب بأقل زاوية ممكنة من الفرد و بمجرد عبور المقدم من الفرد وضع الدفة تجاه الفرد , سحب الفرد حتى يصبح مواجه لجانب القارب.

6. جذب الفرد إلى القارب في وضع أفقي و يجب تجنب سحبه في وضع رأسي تحسباً لانخفاض درجة حرارته.

7. إذا كان الشخص مصاب يجب وضعه على النقالة و تربيط الأحزمة الخاصة بها.



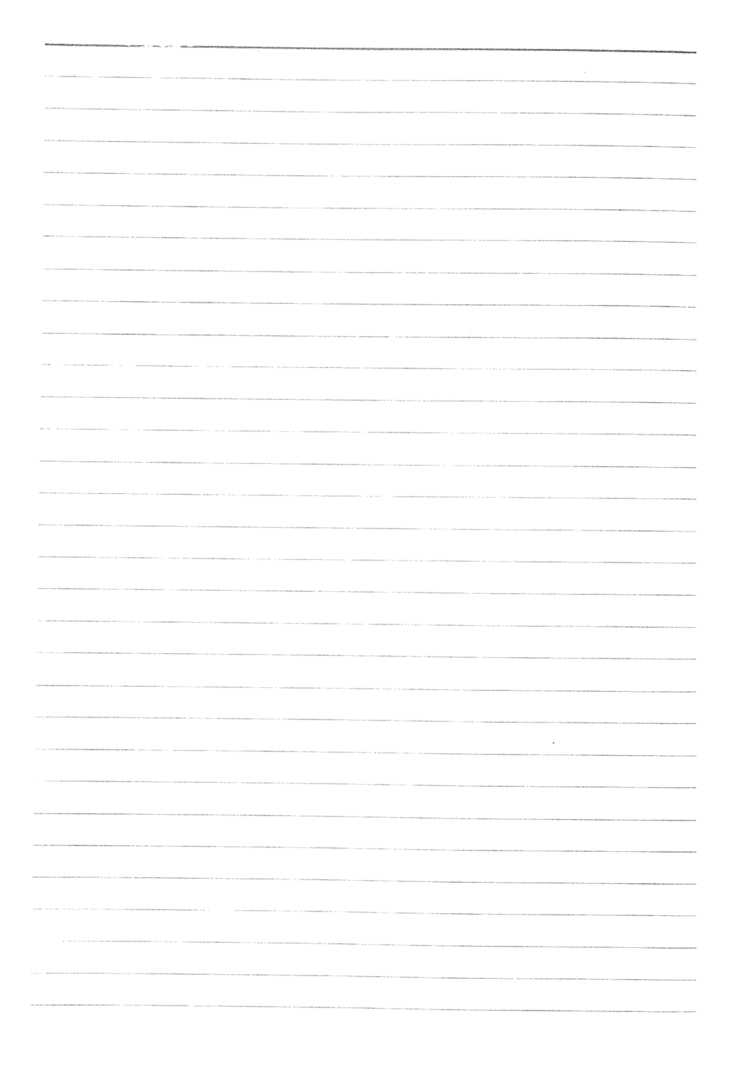
استخدام قارب الإنقاذ في عملية قطر وتجميع الرماثات

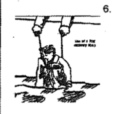
1. قارب الإنقاذ مجهز بحبل قطر لا يقل طوله عن 50 متر و يوجد نقطة بمؤخرة القارب لها تقويا خاصة لتثبيت حبل القطر و القارب لديه القدرة على قطر أكبر رماثات السفينة بسرعة لا تقل عن 2 عقدة مع مراعاة أن أقصى سرعة يمكن قطر الرماث بها هي 3 عقدة .

2. طول حبل القطر يجب أن لا يقل عن 10 متر لتجنب وجود فراغات هوائية أسفل الرماث بفعل البحر و الأمواج مما يؤدي إلى انقلاب الرماث .

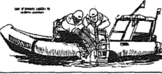
3. التحميل علي حبل القطر يكون تدريجيا ويجب تجنب الإجهاد الفجائي على الحبل.

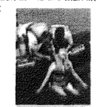
4. يكون قطر الرماثات مع الاتجاه العام لحركة البحر (Drift) .



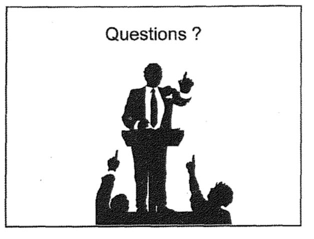


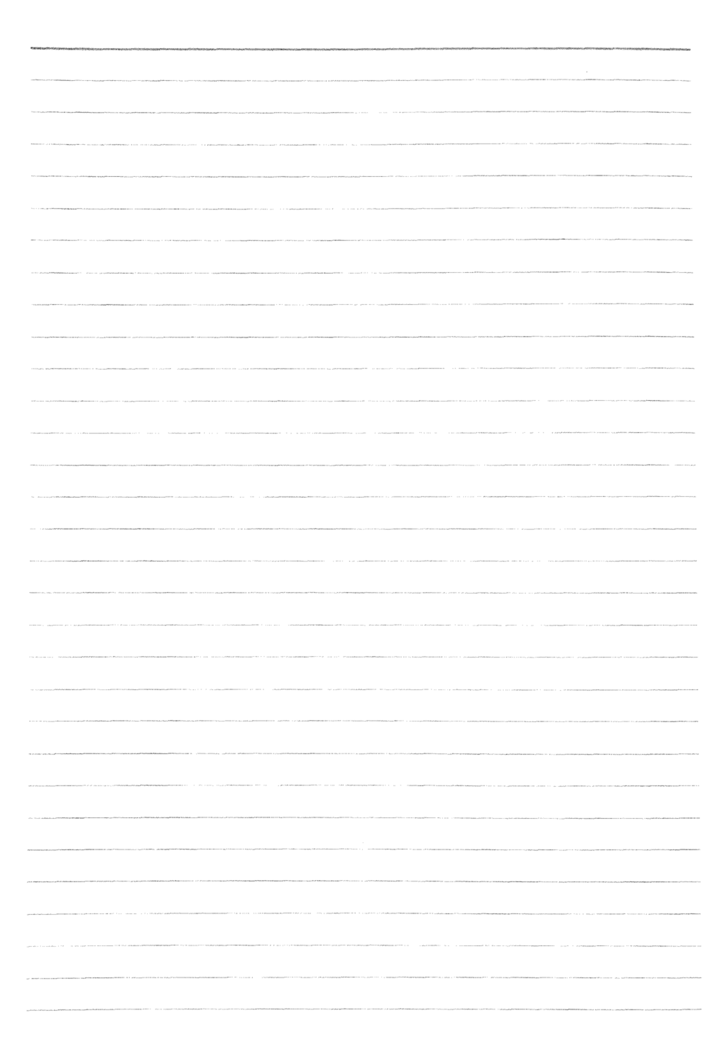
6. When in position, and if necessary use astern power to stop the boat and select neutral to minimize the danger to the man in the water. Use the rescue quoit and line if the man is capable. Use the boat hook only if absolutely necessary and with great care. Lift the man into the boat in the same fashion as the two man lift for the life raft





Questions ?



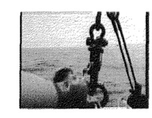


Swing engine down, make ready, and start up decoupled.

Note: The engine must not be allowed to run for more than one minute with the boat unlaunched.



When the boat is on the water, release the lifting ring and hoist rope immediately in accordance with the hook release gear instruction and operating manual.
Finally release the boat using the painter fitting in the bow to allow the boat to be maneuvered away from the ship





Pick up from sea to rescue boat

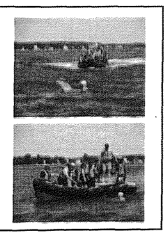
- **Rescuing someone from the sea is difficult and can be dangerous for the person in the water and those in the rescue boat.**
- **The person in the water must be assumed to have a reduced body temperature in addition to any injuries from the fall, water in the lungs etc.**



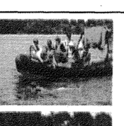
1. Swing the propeller away from the man in the water by tuning the wheel in the direction of the fall. This will take the propeller away from him and begin the maneuver
2. Keep the Person in sight, with a lookout if necessary and come onto a reciprocal course.
3. Run down wind until the craft can be turned into the wind with the man a head



4. Decide which side to pick the person up. Always pick up on the windward side (i.e. keep the between you and the wind). If there are any problems the boat will not be blown over the man but away from him and the movement of the waves against the door may help to recover the man over the gunwale. Open hatches and have men and equipment at the ready.

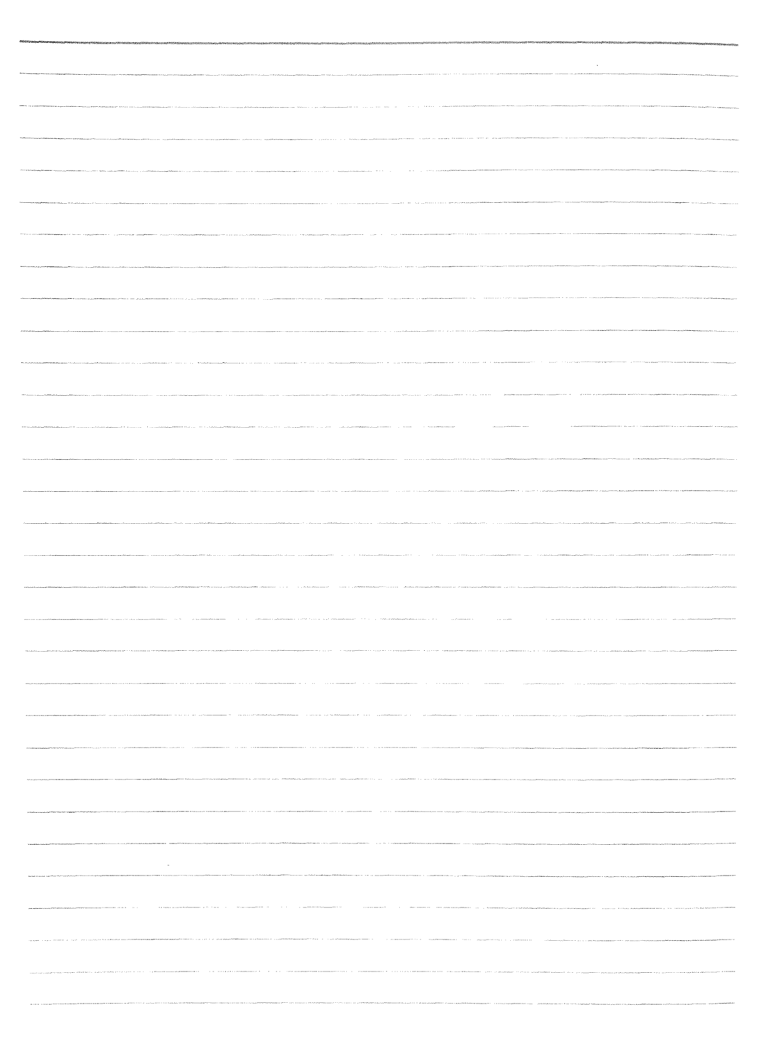


5. Slow down and carefully approach down wind with the man right ahead. As you approach swing the boat to one side and the doorway will present itself to the man in the water.

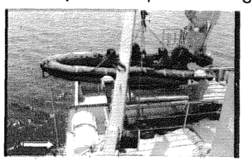




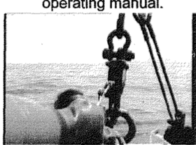




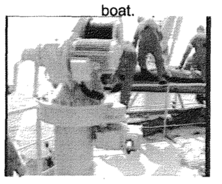
Secure painter in painter fitting.



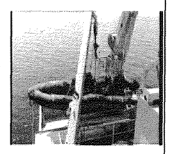
Check hook release gear in accordance with the instruction and operating manual.



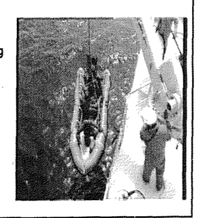
The crew must board and balance the boat.



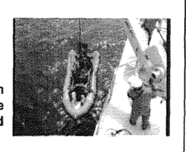
Swing the boat out from its cradle to its on-board loading position.
Check crane/davits in accordance with the davit operating manual.

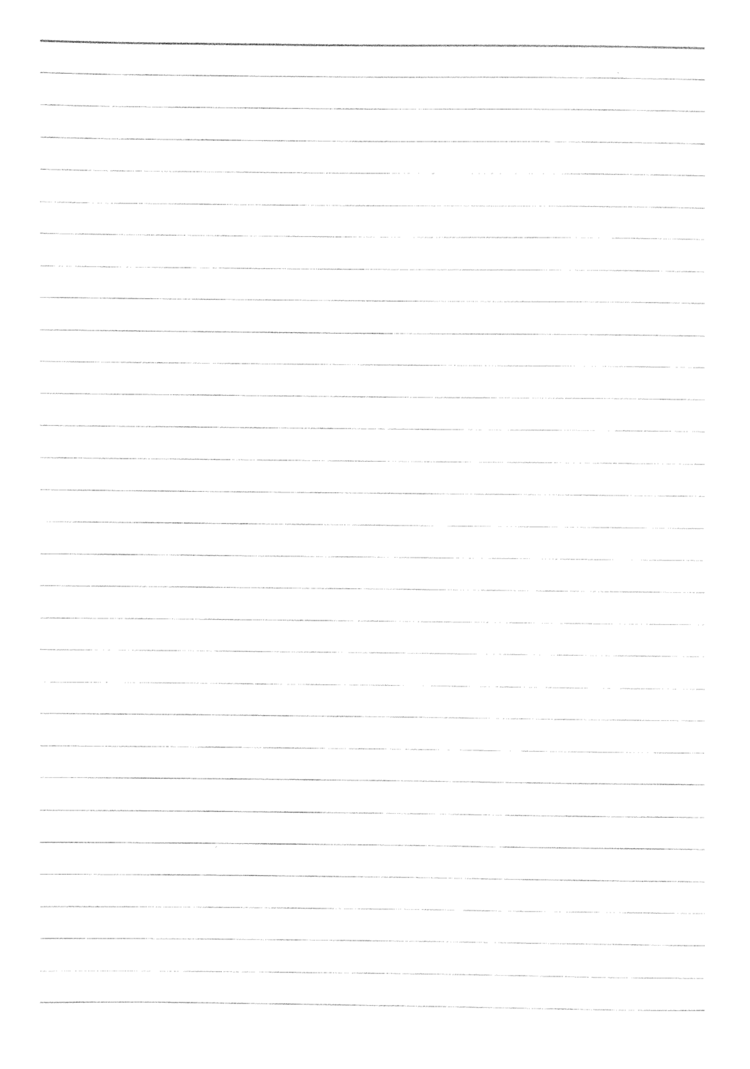


The operator can now begin lowering the rescue boat by the brake lever or pulling the remote control which operates the brake through a pulley system



Easing off. - Make sure that the crew members have taken up their correct positions when the boat is launched: One person at the helm, one at the hook release gear and one in front at the painter.

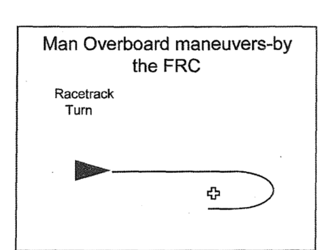




Person missing at sea

- Slowest speed ahead.
- Search ship.
- Makes announcement (VHF).
- Time when last seen.
- Search and rescue procedures.

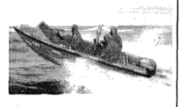
Man Overboard maneuvers-by the FRC



PREPARING AND LAUNCHING THE BOAT

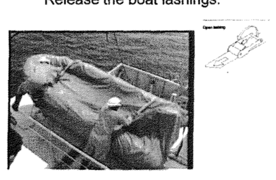
Manning Of Rescue Boat

The minimum crew of the R.B are as the following:

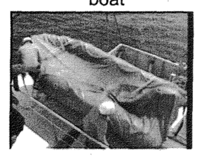


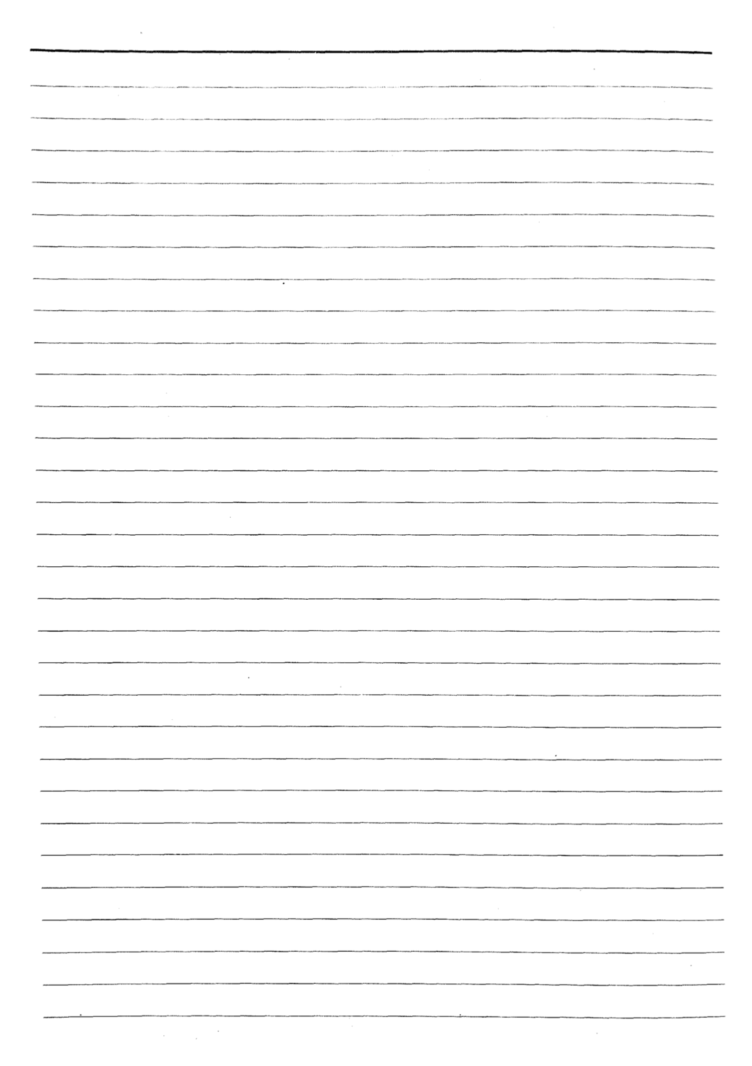
1. The coxswain
2. One person to release the painter.
3. one at the hook release aear.

Release the boat lashings.



Remove the tarpaulin from the boat





Man Overboard

The rescue of a man who has fallen into the water, certain actions must be done at the earliest without losing any time.

- Releasing of Man Overboard marker.
  - his falling overboard has been noticed.
  - His morale will be higher
  - gear up his left over energy and courage

Some of the factors, which will determine the type of maneuvers

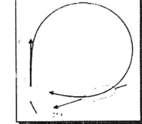
- Visibility
- Traffic
- Open / enclosed waters.
- Whether the man was seen falling or was reported missing.
- Time elapsed since man was last seen.
- Present speed.
- Size and maneuverability of the ship.
- Help available from neighboring ships or boats etc in vicinity.
- Status of own rescue boat.

Man-overboard Maneuvers by the ship

Single turn
Williamson turn
Scharnow turn

Single turn (270° maneuver)

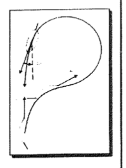
Rudder hard over (<u>in an "immediate action" situation, only to the side of the casualty</u>) . After deviation from the original course by 250°, rudder to midship position



Williamson turn

Rudder hard over (in an "immediate action" situation, only to the side of the casualty).

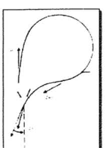
After deviation from the original course by 60°, rudder hard over to the opposite side. When heading 20° short of opposite course, rudder to midship position and ship to be turned to opposite

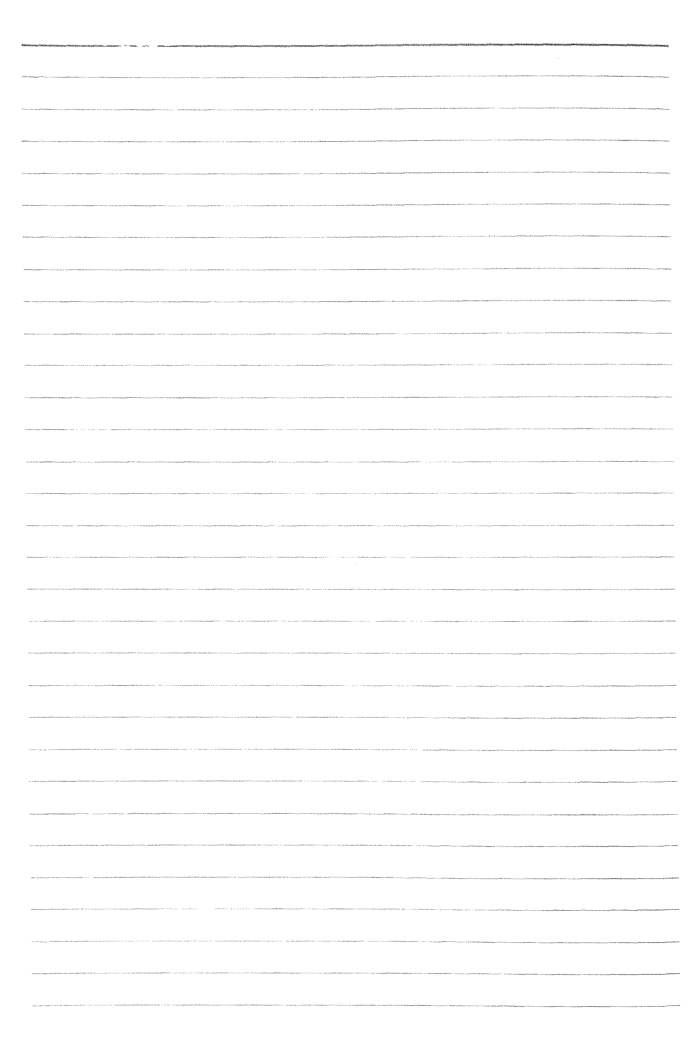


Scharnow turn

(not to be used in an "immediate action" situation.)

Rudder hard over. After deviation from the original course by 240°, rudder hard over to the opposite side. When heading 20° short of opposite course, rudder to midship position so that ship will turn to opposite course.





Search patterns

Man Overboard Recovery

Recovery methods

- ship
  - fastest method
- small boat
  - average time to launch
- helicopter
  - average time to ready for takeoff

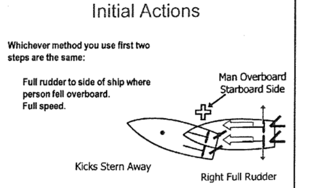
immediate action

- Receive report
- direct officer to initiate appropriate turn for the circumstances
- Keep man in sight (searchlights at night)
- designate bridge team member to drop a smoke in the water
  - note: no smoke for aircraft crash (fuel in water)

Initial Actions

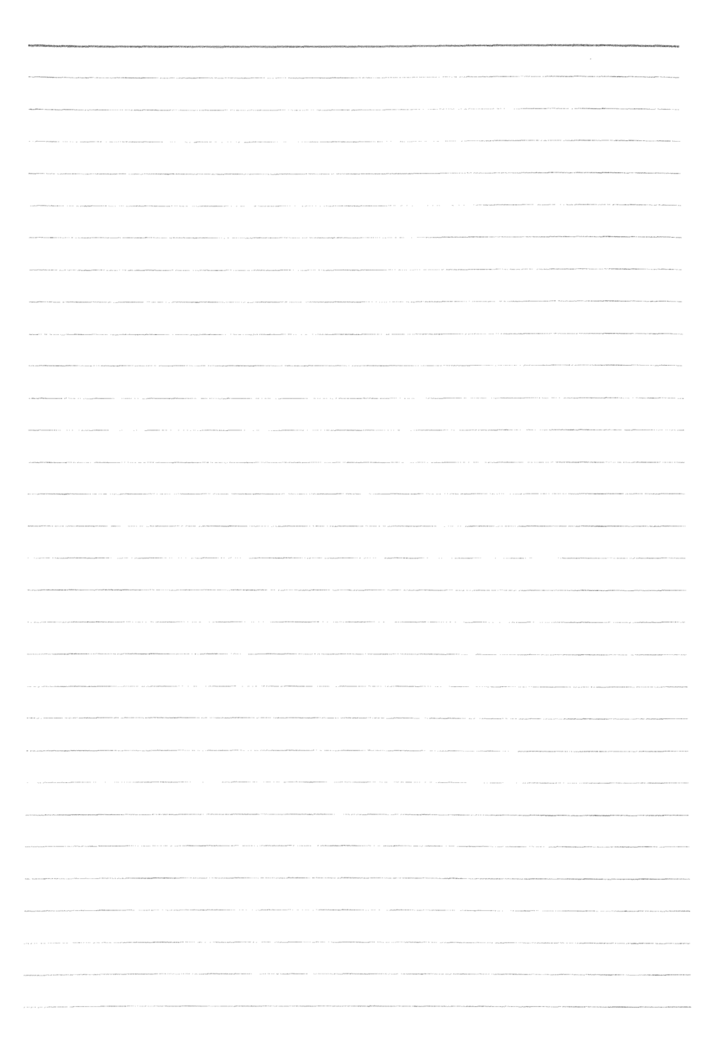
Whichever method you use first two steps are the same:

Full rudder to side of ship where person fell overboard.
Full speed.



additional actions

- notify Captain
- hoist Oscar flag (day); turn on red-over-red pulsating (night)
- notify other ships
- additional information (reports)
  - how long man has been in water
  - water temp and stay time
  - bearing and range to man



Day 3 outline

- Recover and care of persons
- Transfer immersion survivor to mother ship or helicopter
- Man Overboard Recovery
- Some of the factors, which will determine the type of maneuvers
- Maneuvers by the ship and FRC
- Preparing and launching the boat

Recover and care of persons

Your role as a rescuer

- Readiness to conduct a rescue operation
- Handling fast rescue crafts
- Use of communication equipments
- Understanding cold water survival
- Treatment of the immersion survivor
- Transfer immersion survivor to mother ship or helicopter

Note the first four points had been covered at previous sessions, now we focus at the treatment and transfer of survivals

Treatment of the immersion survivor

At the rescue craft

- Taken from the water horizontally, head towards astern with legs slightly elevated
- Use of thermal protective aid (TPA)
- Check the survivor's breathing and pulse (first aid)

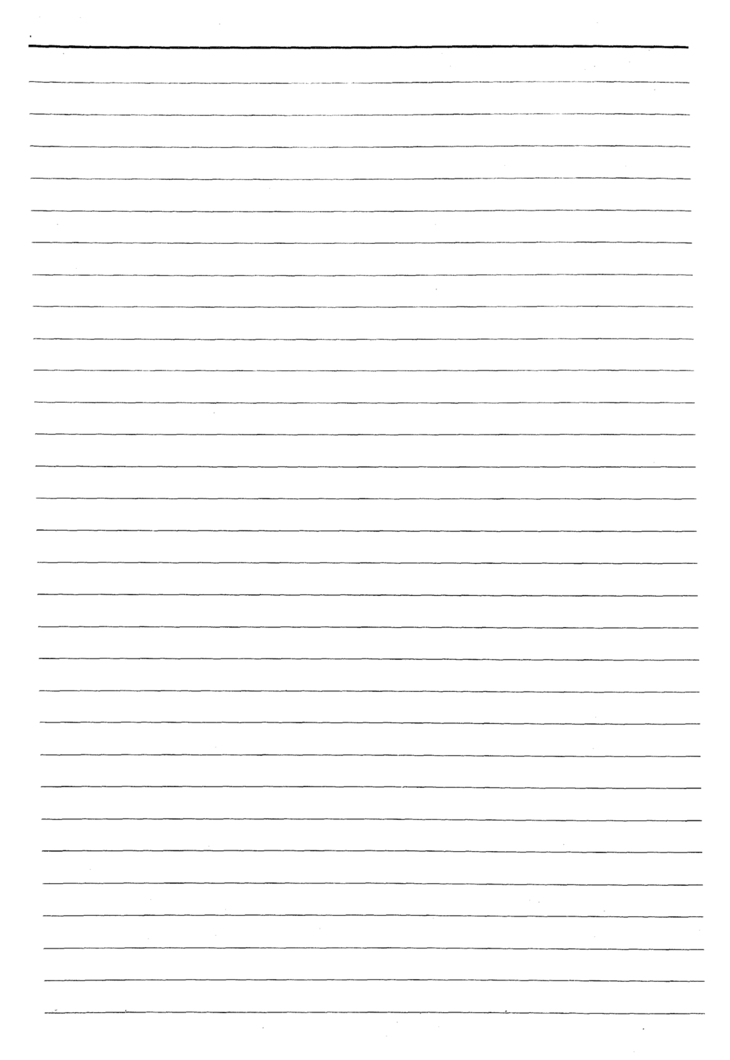


Treatment of the immersion survivor

After has been transferred

- Immediate first aid action (conscious / unconscious)
- Removal of all wet clothes and replace with dry clothes or blankets
- Hot sweet drinks
- Rest in a warm environment (normal room temperature 25°C)
- Do not allow alcohol or smoking, or massaging or rubbing of the cold skin
- Resting horizontally, with their legs slightly elevated
- Watched until core temperature has exceeded 35°C
- Check the survivor's breathing and pulse
- Ask for medical assistant

Transfer immersion survivor to mother ship or helicopter



1 Two crew members to swim to the aft end of the boat.
2 Both climb onto the fender on the same side. Use the edge at the side of the engine recess for handhold. Engine may also be used as handhold.
3 Stand on the fender, hold onto the mentioned cable and use the body weight to rock the boat back and forth until it turns back to the upright position. Take advantage of any waves.
4 As the boat turns back, jump backwards to avoid ending up under the boat. In particular, look out for the engine. (The boat comes back fairly slowly, so there is ample time to get out of the way.)
5 Climb back into the boat, either over the side or the transom, where the engine can be used to step on. Let the boat drain, check compartments for water, replace cord on dead man switch and start engine.

Readiness of fast rescue craft and related equipment for immediate use

checks daily and again on each occasion External

- Outboard motor firmly clamped to the transom and wire retaining strop in position.
- Drain hoses securely attached and triced up.
- No damage to hull or outside of the buoyancy tube.
- Buoyancy tube firmly clamped to the hull.
- Nothing fouling the outboard motor or propeller.
- The motor tilts freely.

checks daily and again on each occasion Internal

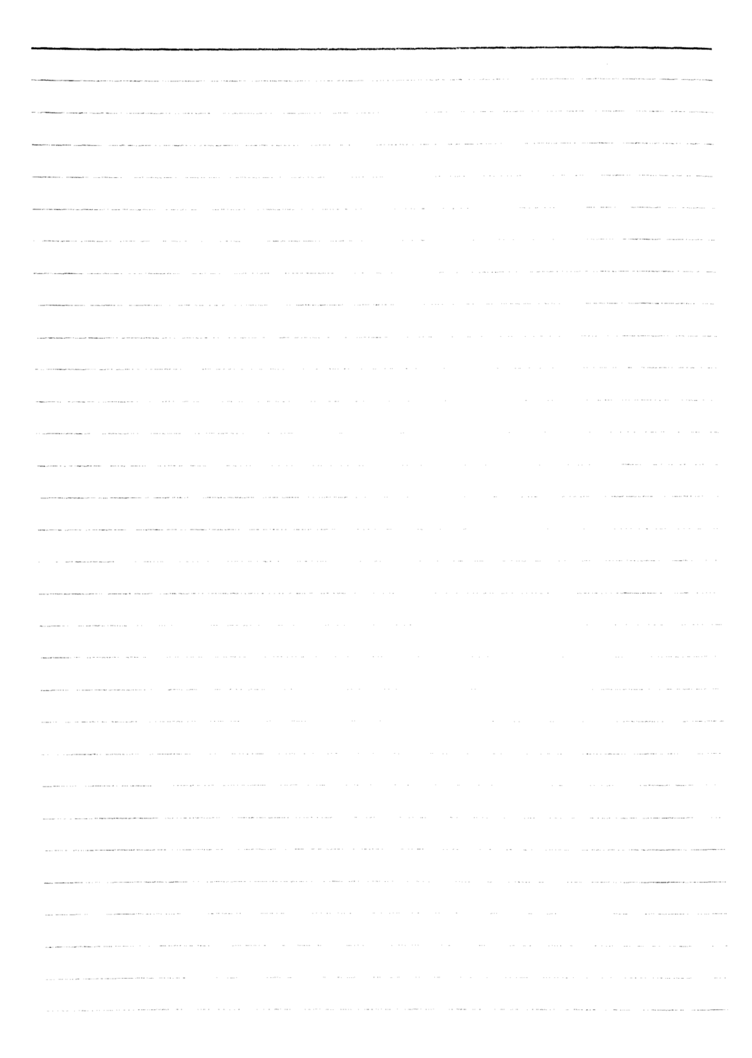
- Slings clear of obstructions and not worn or frayed.
- Slinging points secure and shackle pins in place and housed.
- Boat rope strop securely attached and toggle ready for use.
- Painter and stern fast secured and coiled down.
- Equipment safely and securely stowed.
- The gear shift lever is in the neutral position.
- Fuel tanks full and shaken well to mix the contents.
- Fuel line connector is [illegible] snapped on and fuel line is primed.
- Kill cord is fitted to the cut-out switch and a spare Kill cord is readily Available

checks daily and again on each occasion Buoyancy Tube

- Inflated so that it is taut to the touch.
- All patches, tapes and bonding strips firmly stuck down.
- No signs of abrasion cracks or damage.

Maintenance

1. Completely clean after each launch, or at least once a month.
2. Inspect the boat and equipment after each launch, or at least once a month.
3. Inspect and service the engine in accordance with the instruction manual.
4. Inspect and service the release gear in accordance with the instruction and operating manual.
5. Inspect the engine in accordance with the instruction manual.
6. Carefully inspect the boat for damage.
7. Inspect the hook release gear in accordance with the instruction and operating manual.
8. Ensure that loose equipment is intact and properly located.
9. Place the boat in its cradle and secure the lashings.
10. Tie down the tarpaulin.



Handling - Operating in the Open Sea

FRCS are seaworthy, capable of operating in worse weather conditions, and may be lowered with safety at speeds of between 5 and 12 knots.

Before being lowered or leaving the for an open sea passage the coxswain is responsible that the FRC is fully prepared.

Check following preparations are made:

1. Crew correctly briefed, dressed and equipped.
2. Instructions on the objective and method of carrying out the operation are understood by all concerned.
3. Communications between ship and FRC tested.

Handling - on being Lowered at Sea

- The engines of FRC fitted with appropriate cooling water arrangements should be started while being lowered.
- FRC not so fitted should be started as soon as the boat reaches the water.
- Once the FRC hook has released the coxswain should steer slightly away from the ship's side and move ahead to take the strain off the boat rope.
- When ordered by the coxswain the boat rope should be released and recovered on deck.
- The coxswain must keep the FRC clear of the boat rope after it is slipped and then increase speed and move outwards away from the ship.
- Once clear, turn to the course required.

Handling - Recovery of Survivors

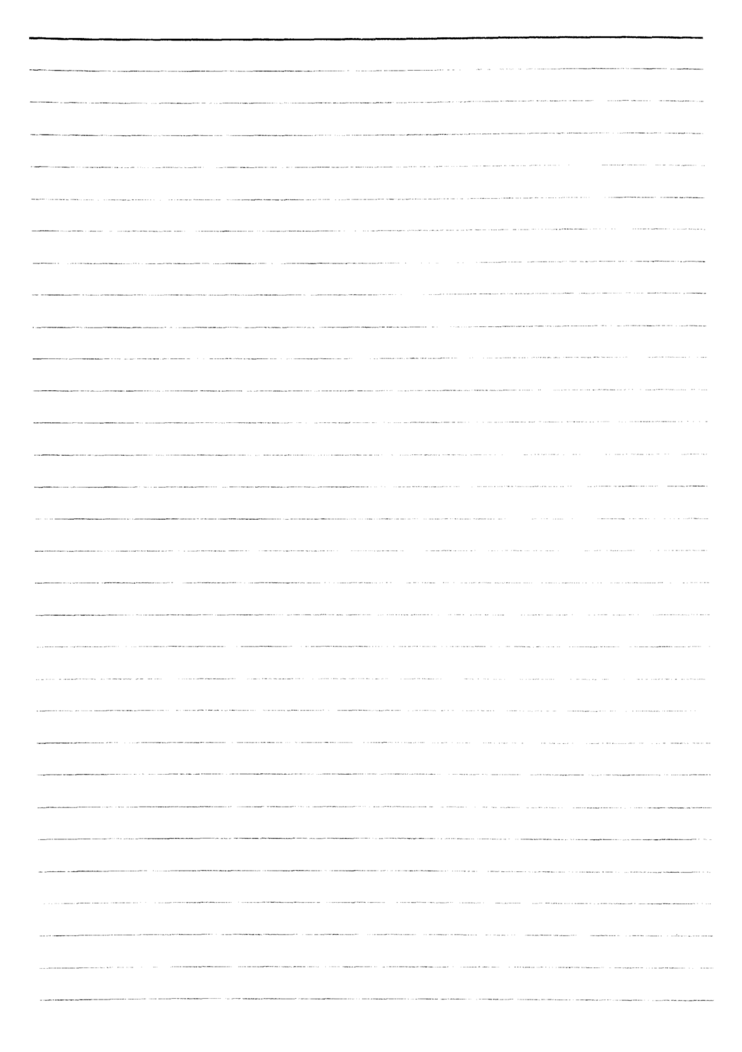
- A FRC should be stopped several meters upwind of the man in the water; the engine must then be put into neutral so that there is no chance of the propeller injuring the man.
- The boat should be allowed to drift down on to the survivor who, when close enough, should be lifted into the boat by two men; if the man is uninjured remember a line may be thrown to him.
- If the FRC has stopped in the wrong position and is drifting clear of the man it must be maneuvered upwind and the process repeated.

- Once inboard the casualty must be protected from exposure, then positioned with his feet in the bows and his head aft.
- The crew must be prepared to give basic first-aid if necessary, and in any case must report by radio the condition of the survivor (s).
- When practicable, the casualty should remain in the boat and be transferred to the care of a medical team after the boat has been hoisted into its stowage.

Handling - Emergencies

- Engine Failure.
- Steering Jammed.
- Deflation of the Buoyancy Tube.
- Fire.
- Swamping.
- Corkscrewing.
- Man Overboard.

Procedures for righting a capsized fast rescue craft.



Handling- Going Alongside

1. Approach under power at an angle to the line of the jetty.
2. At 3-5 boat lengths away put the engine into neutral.
3. When the boat has closed to about one boat length put the wheel away from the jetty.
4. As the boat begins to swing, reverse the wheel.
5. Clutch to astern and increase power as necessary to stop the boat and bring the stem towards the berth.
6. When alongside and stopped - put the clutch in neutral.



Before starting your approach considering the following three points;

- Choice of Berth
  - snags on the side of the jetty,
  - wind and tide,
  - obstructions in the approach,
  - the proximity of ladders
  - presence or otherwise of fenders.
- Selecting the Angle of Approach
  - The best angle of approach is at about 30" to the line of the ship or jetty.
- Judging the Speed of Approach
  - speed should be reduced to slow at about 50 meters from the berth

Handling- Leaving from Alongside

There are two methods of making a departure from alongside in a FRC.

- Stern board Method.
- Proceeding Ahead.

Stern board Method

1. Put the wheel away from the berth.
2. Bear off the bow.
3. Engage slow astern to draw the stem away from the jetty.
4. When the stem has swung out to an angle of about 20-30 degrees, put the wheel amidships to stop the swing.
5. Make a short stern board to draw clear.
6. Put the engine into neutral.
7. Put the wheel away from the berth.
8. Engage slow ahead, and watch the stem to prevent it swinging in to touch the jetty.
9. Steady on a suitable course.

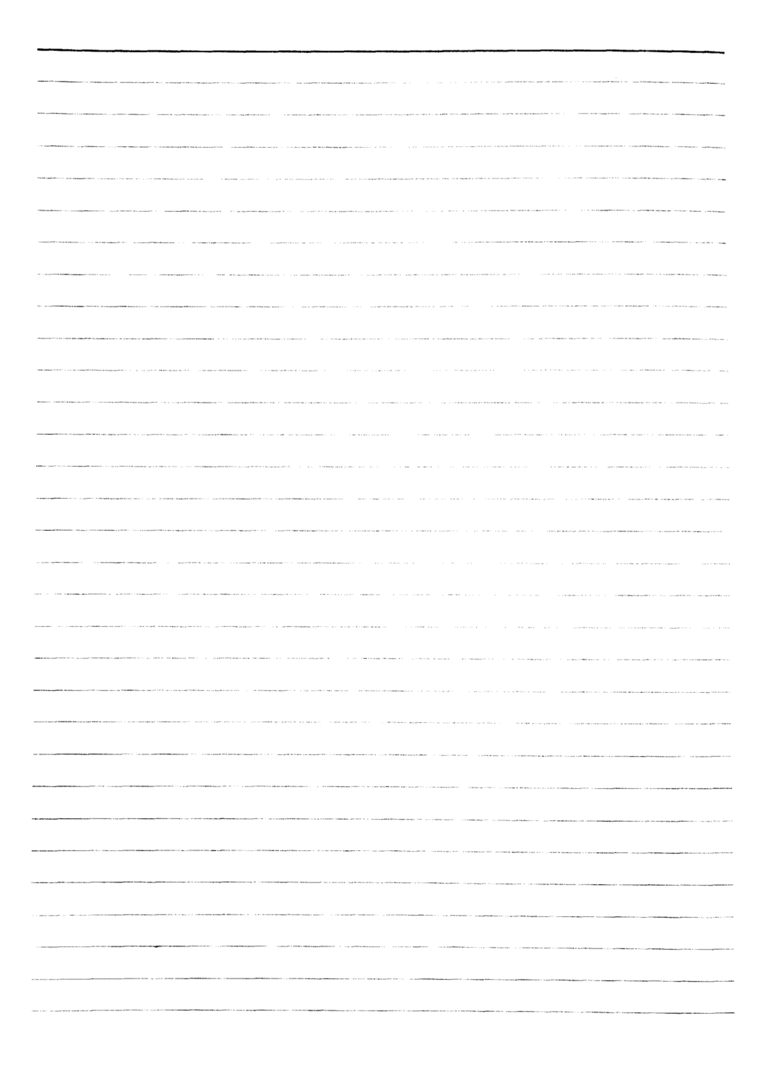
Proceeding Ahead

1. Bear off the boat broadside on.
2. Put on about 5 degrees of wheel away from the berth.
3. Engage slow ahead and watch the stem.
4. Steady on a course about 10-15 degrees out from the berth.
5. When clear, alter to the required course.
6. Increase speed.

Handling- Operating in Harbor

Comply with the local port regulations:

- maximum speeds and routes within a harbor.
- The Rule of the Road must be closely observed.
- plenty of sea room must be given to any ship or boat being overtaken.
- A good look out must be kept.
- FRC create a considerable amount of wash; take care not to upset men working over the side, or to endanger divers or disturb people in small boats.



- When running down sea:
  - **less easy to handle.**
- Important principle:
  - **present a high bow to the wave which the FRC is about to overtake.**
- The surfing situation:
  - **should be avoided if possible as this may lead to a FRC burying her bows into the tail of the wave ahead.**
- Payload or Passengers:
  - **affects its performance.**
- It must be remembered:
  - **stern of a FRC is less buoyant than the bows, so it is inadvisable to allow following wave to overtake and**

Tilting the outboard motor or stern drive to different angles produces the effects shown in Figure.



You must be sensitive to the FRC performance and trim the propulsion unit to the optimum angle of tilt.
An incorrect angle of tilt will reduce both speed and range.

- Boat Control

The first step towards learning to handle a FRC is to acquire a feel for the controls.

The helmsman needs to know instinctively

- when **he has moved out of neutral and engaged the ahead or astern gear,**
- how **far he has to move the throttle to produce the power he requires,**
- where **the wheel is.**

It is worthwhile spending some time in open water to become familiar with these controls before starting to learn how to maneuver the boat.

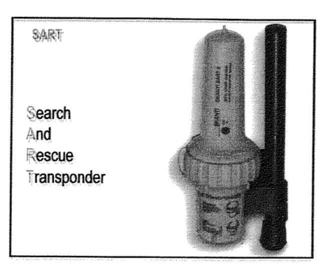
Handling - Visual Lookout

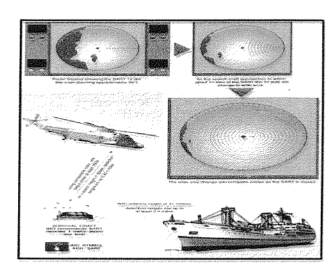
- There is a good
  - **all-round view from the helmsman's position.**
- Careful look-out
  - **must be kept and bold action taken to prevent close quarters situations developing.**
- At high speed
  - **rain and spray may make it difficult to see ahead and protection such as a visor or goggles should be used.**

Handling - Maneuvering

- At Slow Speed:
  - **FRC are steered by altering the direction of the thrust or drag of the propeller.**
- When the engine is clutched:
  - **'ahead' or 'astern' this has the effect of adding power to the steering.**
- when the engine is in neutral:
  - **the steering is sluggish.**
- Important point to remember:
  - **the wheel must be put over before power is applied. When maneuvering alongside or in a restricted space.**
- Accelerating:
  - **Once the Ahead gear is engaged the throttle can be pushed forward firmly to give a very fast**

- Stopping:
  - **A FRC loses speed quickly when the engine is put into neutral.**
  - **If the speed of approach has been misjudged and the boat is found to be approaching too fast, damage can be prevented by using astern power; but control may be lost and another approach may have to be made.**





Handle a fast rescue craft in prevailing and adverse weather and sea conditions.

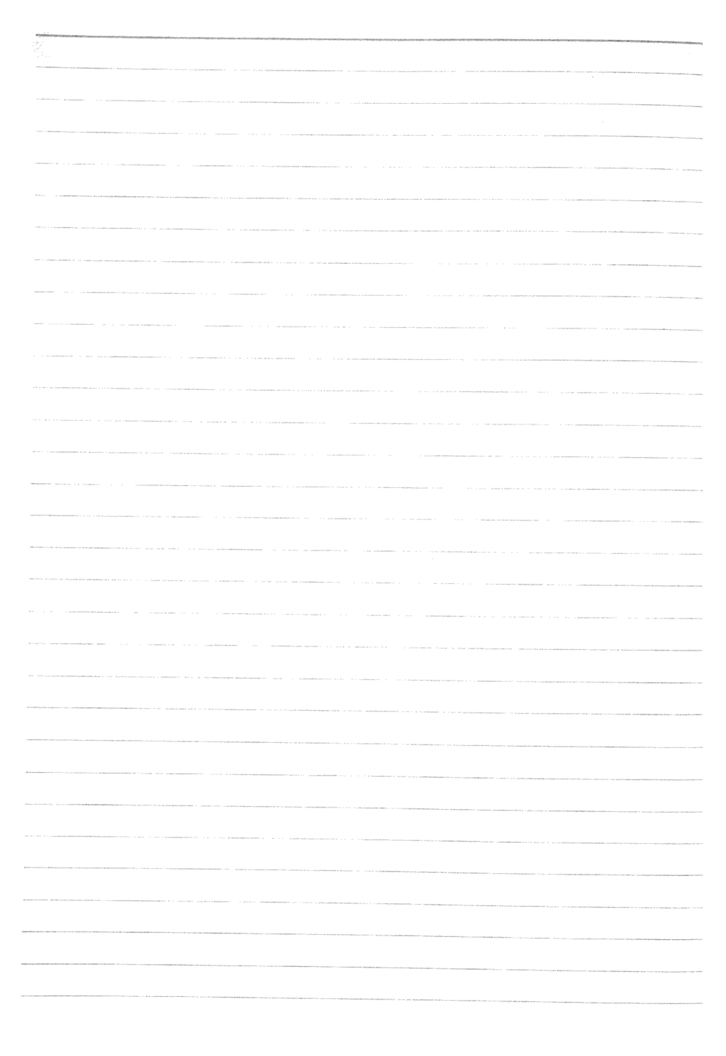
Handling - General Information

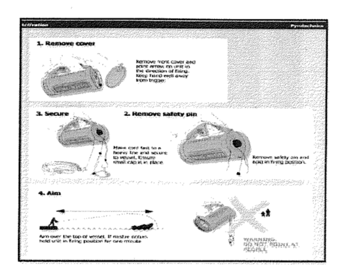
- Fast rescue boats have excellent sea keeping qualities.
- Perform well in bad weather.
- They are extremely stable and unlikely to capsize.
- very responsive and can be maneuvered with great accuracy while its engine is running.

Handling - Behavior and Sea keeping

- On a Straight Course:
  - light, powerful boats, respond quickly.
- When moving slowly:
  - tendency to wallow.
- Reaching planning speed:
  - directionally stable.
- At high speed:
  - slam into the waves, bounce sharply.
- Full speed:
  - corkscrewing motion.
- When Turning:
  - lean steeply inwards when turning at speed.
- All FRC:

- Unwise:
  - to maneuver sharply, the engine may race.
- Effective turn:
  - by reducing speed.
- In rough weather:
  - altering course across the direction of the waves. (zigzags)
- In a Seaway:
  - Manned by an experienced crew.
- When running across a beam sea:
  - the buoyancy tube on the upwind side absorbs the shock of the waves and the buoyancy tube on the downwind side gives lift contributing to stability.
- When heading into the sea.





Aircraft Acknowledgments

Once the pilot of an aircraft has sighted you, he will normally indicate he has seen you by flying low, moving the plane, and flashing lights. Be ready to relay other messages to the pilot once he acknowledges that he received and understood your first message. Use a radio, if possible, to relay further messages. Or signaling techniques.

AIRCRAFT PROCEDURES

If you can contact a aircraft with a radio, guide the pilot to your location. Use the following general format to guide the pilot:

- Mayday.
- Call sign (if any).
- Name.
- Location.
- Number of survivors.
- Any remarks such as medical aid or other specific types of help needed Immediately.

Simply because you have made contact with rescuers does not mean you are safe. Follow instructions and continue to use survival techniques until you are actually rescued.

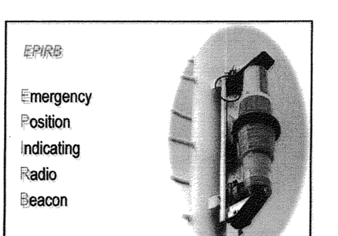
Numbers of pyrotechnics

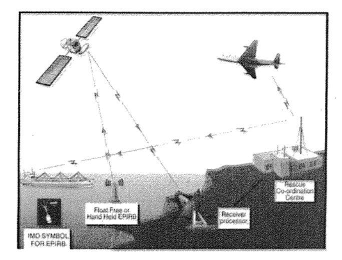
Life boats and life rafts.

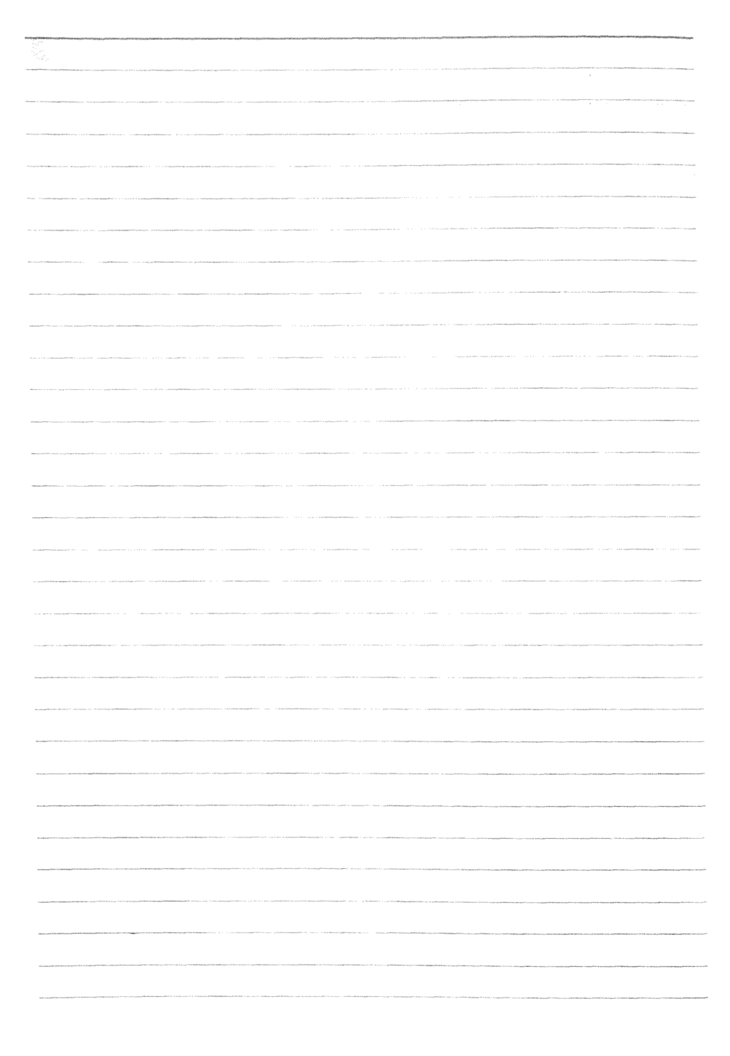
- 4 parachute signals.
- 6 hand flares.
- 2 buoyant smoke signal.

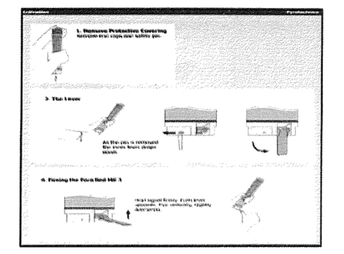
Bridge

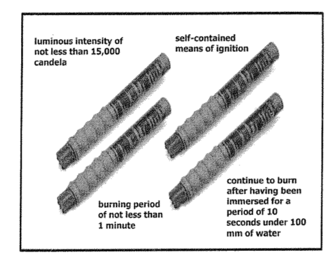
- 12 parachute signals.
- 4 line-throwing appliances.

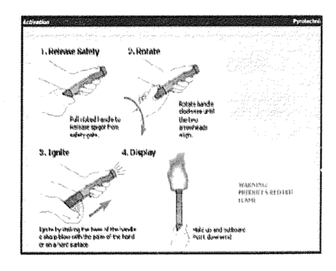


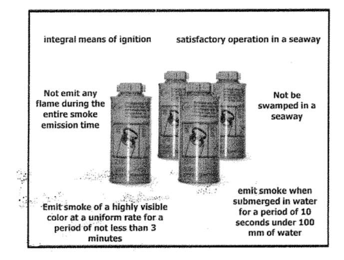


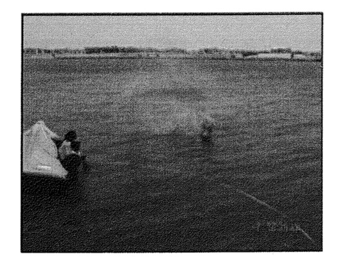


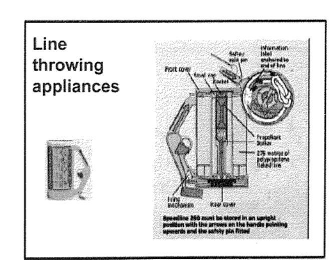


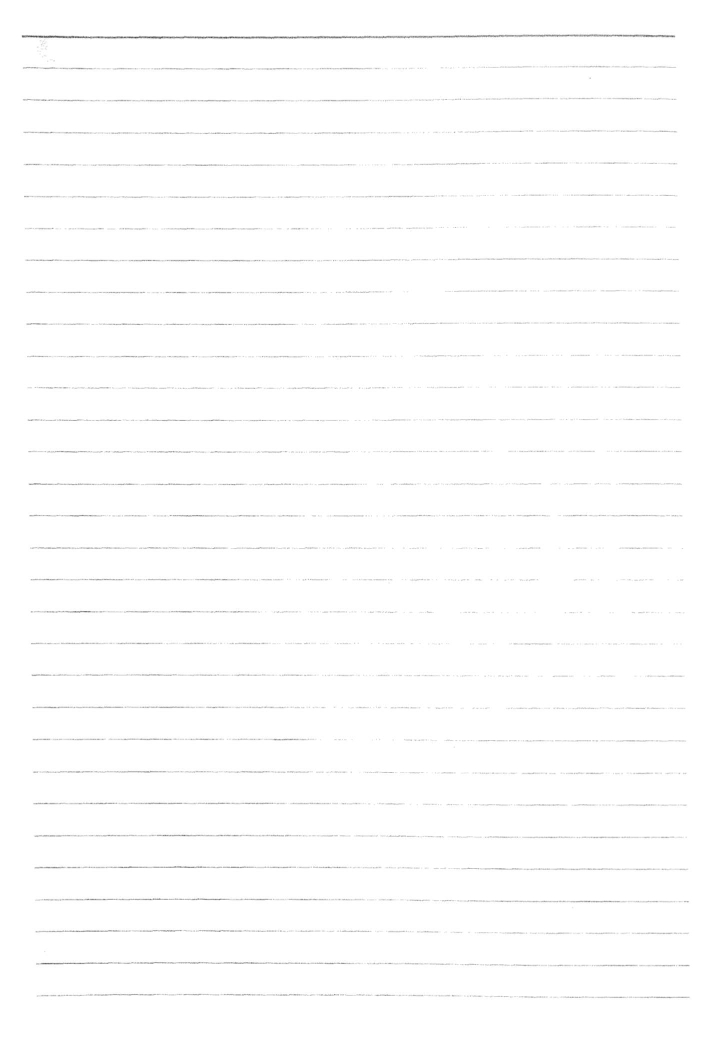

luminous intensity of not less than 15,000 candela
self-contained means of ignition
burning period of not less than 1 minute
continue to burn after having been immersed for a period of 10 seconds under 100 mm of water


1. Release Safety
2. Rotate
3. Ignite
4. Display


integral means of ignition
satisfactory operation in a seaway
Not emit any flame during the entire smoke emission time
Not be swamped in a seaway
Emit smoke of a highly visible color at a uniform rate for a period of not less than 3 minutes
emit smoke when submerged in water for a period of 10 seconds under 100 mm of water




Line throwing appliances



Signaling Techniques

One of your first concerns when you find yourself in a survival situation is to communicate with your rescuer's.

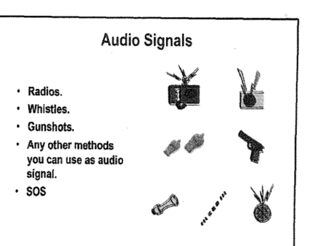
As a survivor, you must get your rescuer's attention first, and second, send a message your rescuer understands.

Means for signaling

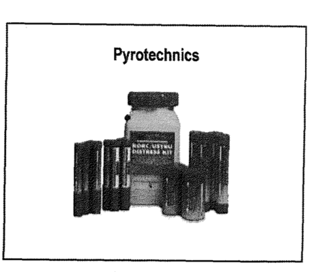
There are two main ways to get attention or to communicate--visual and audio. The means you use will depend on your situation and the material you have available. Whatever the means, always have visual and audio signals ready for use.

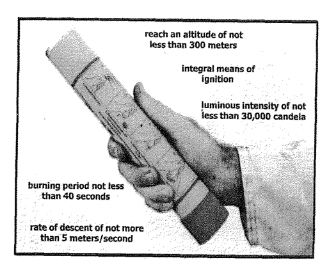
Visual Signals

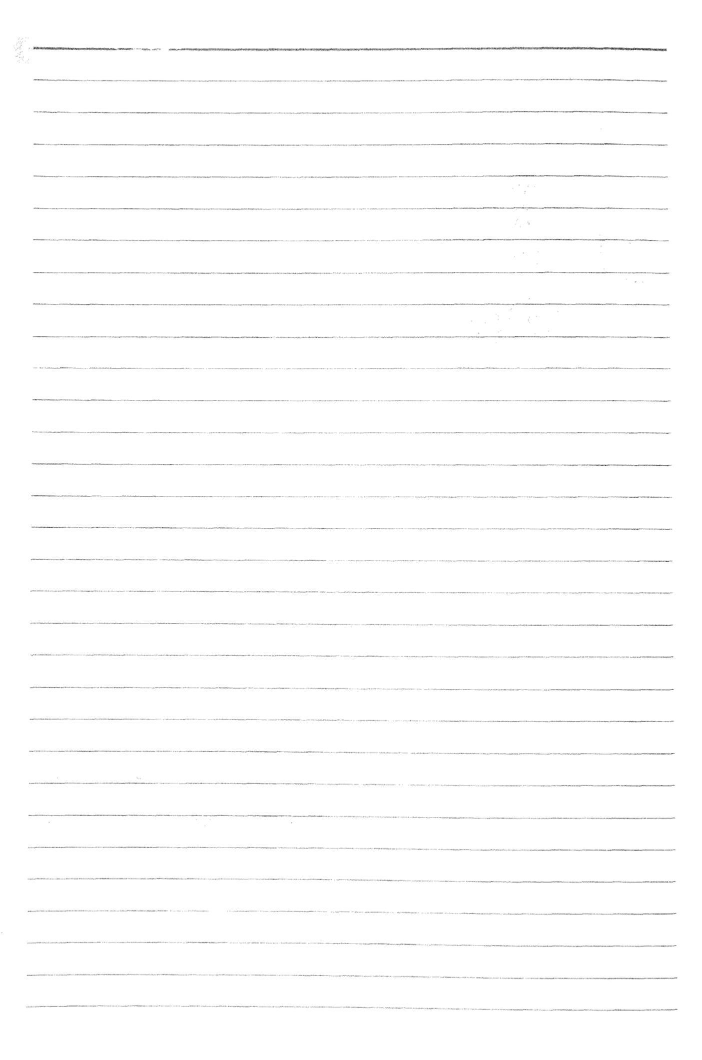
- Fire
- Smoke
- Star Parachute Flares
- Mirrors or Shiny Objects
- Flashlight
- SOS



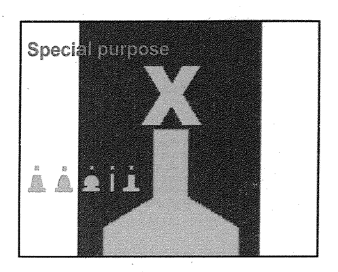
Pyrotechnics

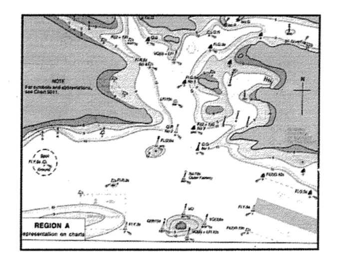


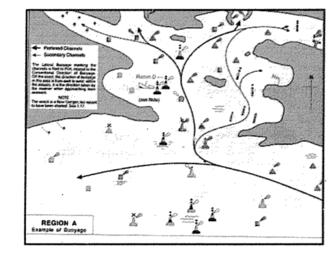


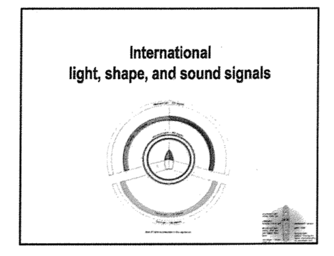


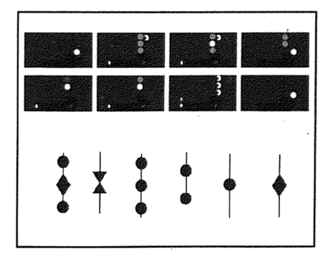

Isolated danger

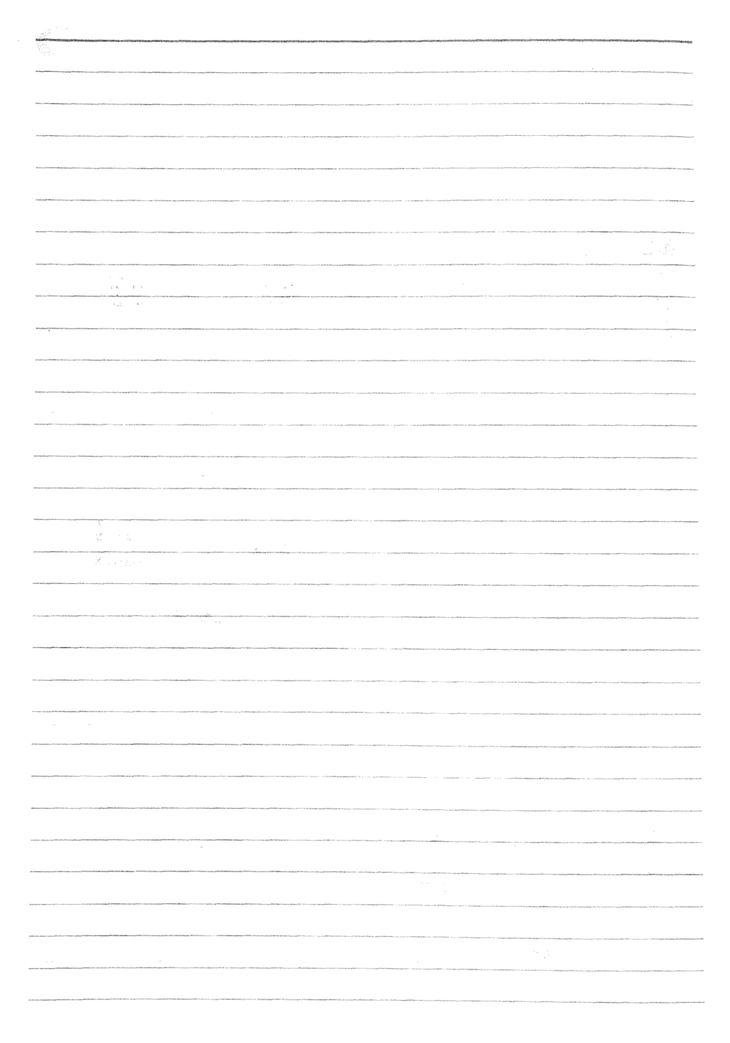

Special purpose
X

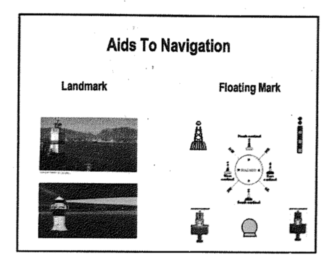

REGION A

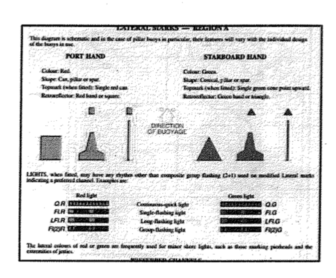

REGION A
Example of Buoyage

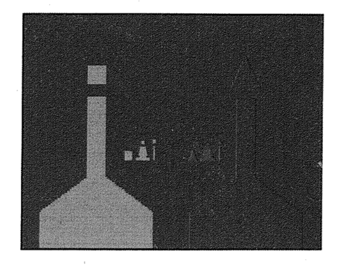

International
light, shape, and sound signals

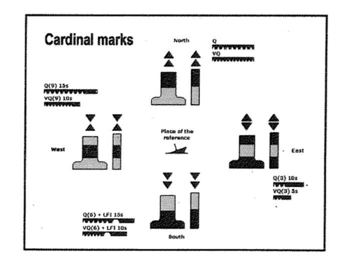


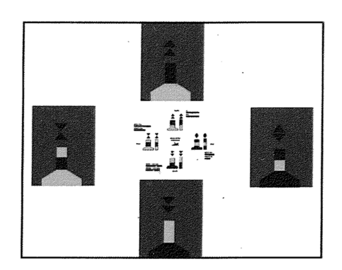


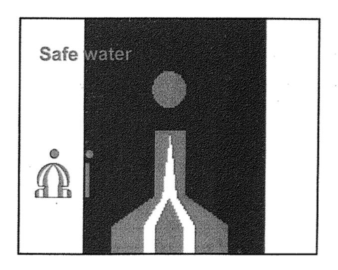

Aids To Navigation
Landmark
Floating Mark

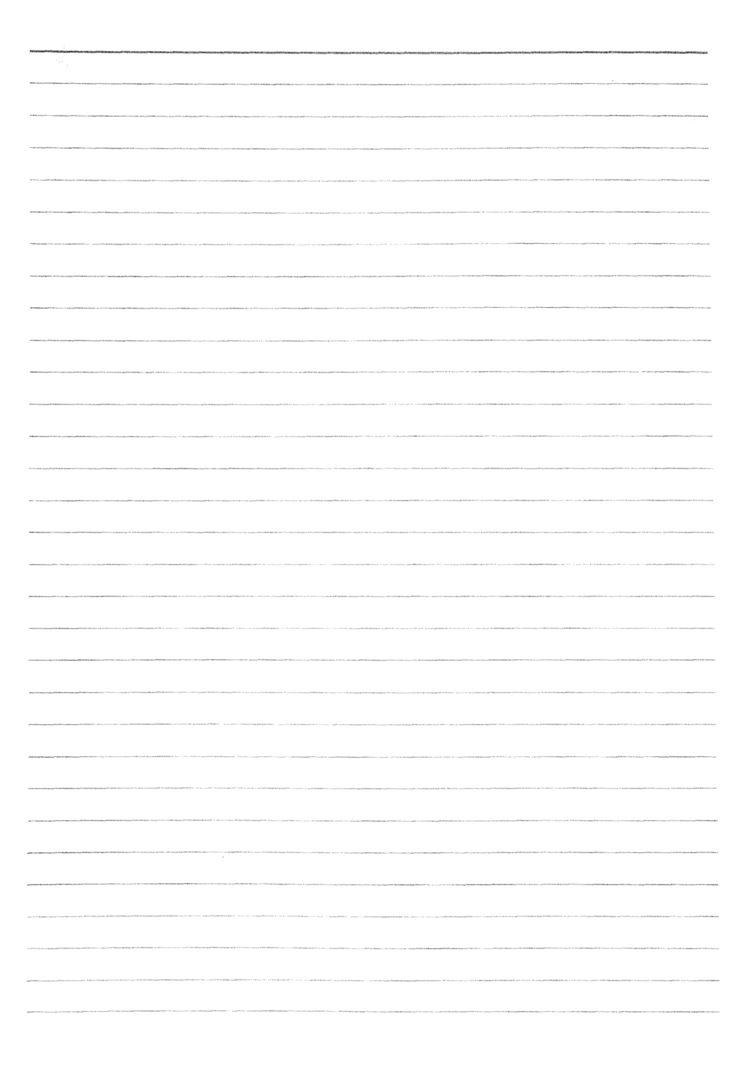

LATERAL MARKS — REGION A
This diagram is schematic and in the case of pillar buoys in particular, their features will vary with the individual design of the buoys in use.
PORT HAND
Colour: Red.
Shape: Can, pillar or spar.
Topmark (when fitted): Single red can.
Retroreflector: Red band or square.
STARBOARD HAND
Colour: Green.
Shape: Conical, pillar or spar.
Topmark (when fitted): Single green cone point upward.
Retroreflector: Green band or triangle.
DIRECTION OF BUOYAGE
LIGHTS, when fitted, may have any rhythm other than composite group flashing (2+1) used on modified Lateral marks indicating a preferred channel. Examples are:
Red light
Q.R
Fl.R
LFl.R
Fl(2)R
Continuous-quick light
Single-flashing light
Long-flashing light
Group-flashing light
Green light
Q.G
Fl.G
LFl.G
Fl(2)G
The lateral colours of red or green are frequently used for minor shore lights, such as those marking pierheads and the extremities of jetties.

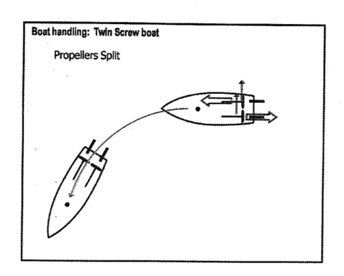



Cardinal marks
North
Q
VQ
Q(9) 15s
VQ(9) 10s
West
Place of the reference
East
Q(3) 10s
VQ(3) 5s
Q(6) + LFl 15s
VQ(6) + LFl 10s
South




Safe water

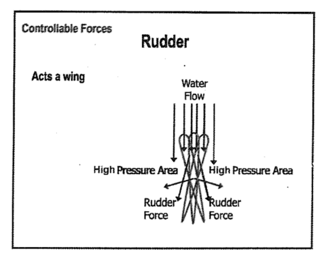




Controllable Forces

Rudders

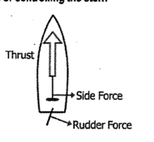
- Used to control boat's heading by moving the stern.
- To have an effect, must have a flow of water across the rudder.
- Normally this flow of water is the discharge current of the screw.



Controllable Forces

Propellers / Rudders

- Primary means of controlling the stern



Controllable Forces

Pivot Point

- Imaginary point on the boat's centerline about which the boat pivots
- Usually located 1/3 the length of the boat from the bow.
- Pivot point is not fixed

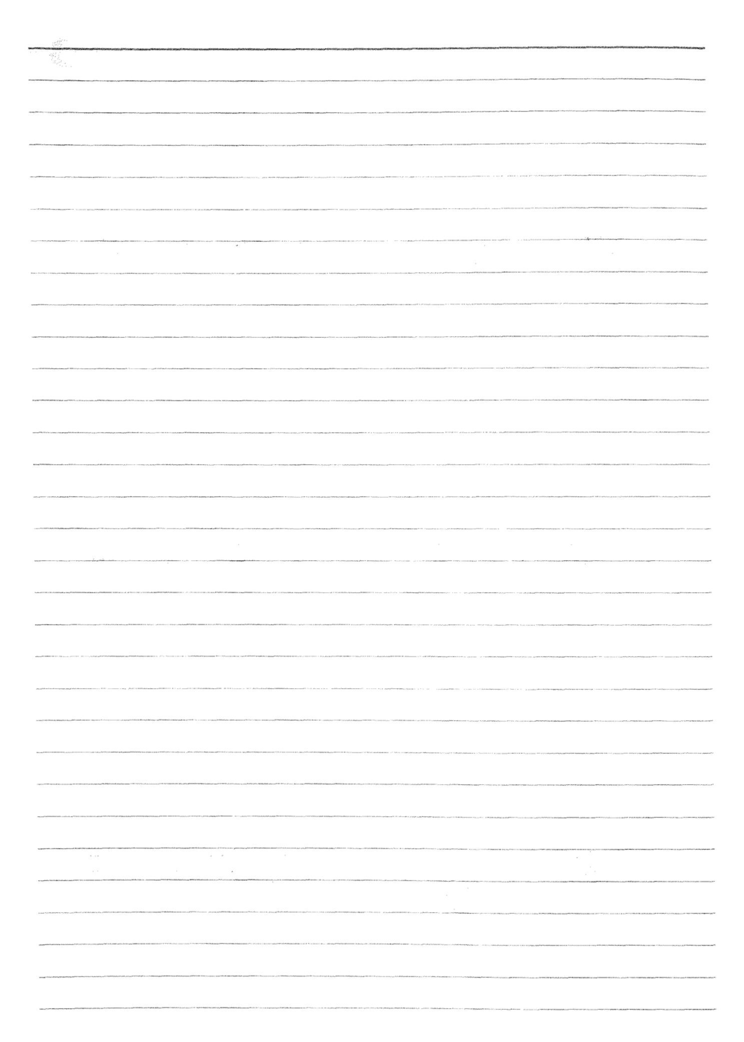
Forces which affect location of the Pivot Point
- Headway or Sternway
- boat's Speed

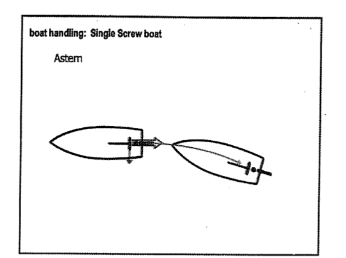
Pivot Point

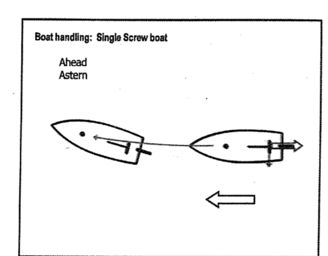
Ship twisting with no way on.

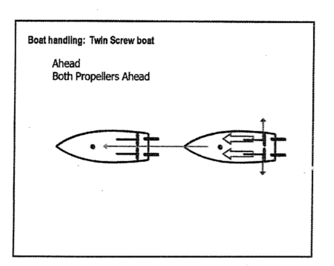
Thrust
Side Force
Rudder Force

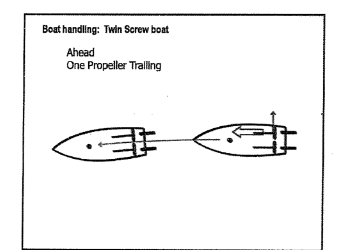
Now lets practice

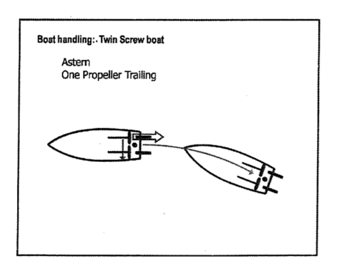


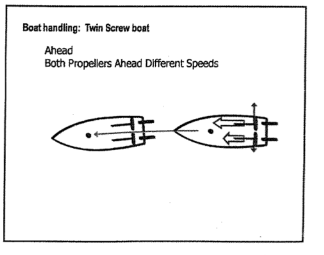

boat handling: Single Screw boat
Astern

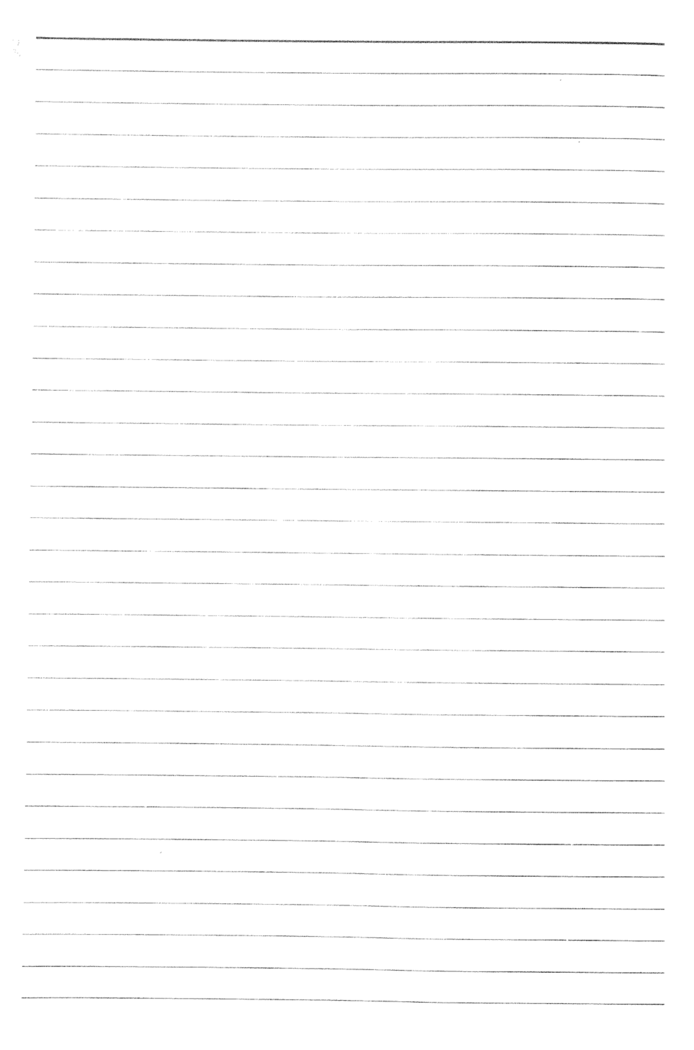

Boat handling: Single Screw boat
Ahead
Astern

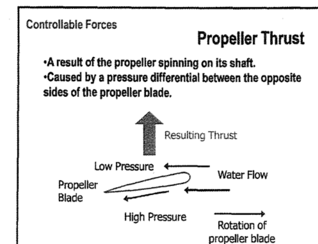

Boat handling: Twin Screw boat
Ahead
Both Propellers Ahead


Boat handling: Twin Screw boat
Ahead
One Propeller Trailing


Boat handling:. Twin Screw boat
Astern
One Propeller Trailing


Boat handling: Twin Screw boat
Ahead
Both Propellers Ahead Different Speeds





Controllable Forces

Controlling Propeller Thrust

Depends on type of propellers

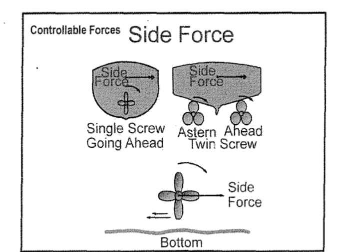
- **Controllable Pitch Propellers**
- **Fixed Pitch Propellers**
  - **Cannot change pitch of propeller**
  - **Thrust (speed) controlled by changing speed of the shaft**
  - **To go backwards, must stop shaft and spin the shaft in the opposite direction.**

Controllable Forces

Side Force

- **Causes stern to move sideways in the direction of propeller rotation.**

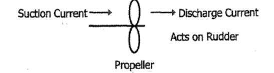
Propeller

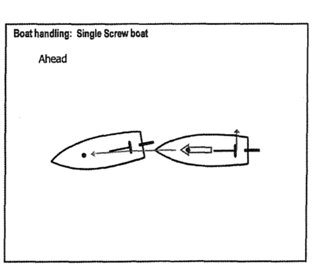


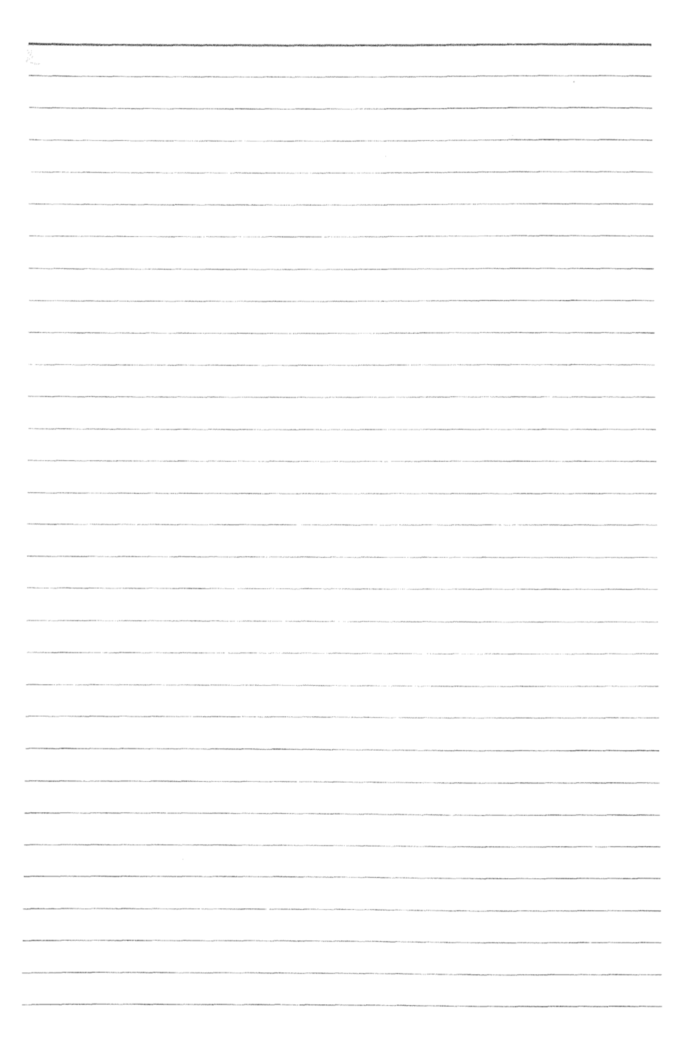
Controllable Forces

Screw Current

- **Consists of two parts**
  - **Suction Current - going into the propeller**
  - **Discharge Current (Prop Wash)- comes out of the propeller**







Day (2) outline

- Handling Theory
- Aids To Navigation
- Handle a fast rescue craft in prevailing and adverse weather and sea conditions.
- Procedures for righting a capsized fast rescue craft.
- Readiness of fast rescue craft and related equipment for immediate use.

Handling fast rescue crafts

Handling Theory

The handling of any type of fast rescue boat is governed by the commonsense rules of seamanship.

Ship handling Theory: Forces

Uncontrollable	Controllable
– Wind	– Propeller
– Current/Tides	– Rudder
– Seas	– Bow Thruster
– Water Depth	– Mooring Lines
	– Anchors
	– Tugs

Uncontrollable Forces

Wind

- Acts on the sail area of the boat
  - Exposed superstructure
  - Hull structure
- boat tend to back into the wind

Current

- Acts on the underwater part of the boat.
- Creates set and drift.

Uncontrollable Forces

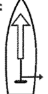
Depth of Water

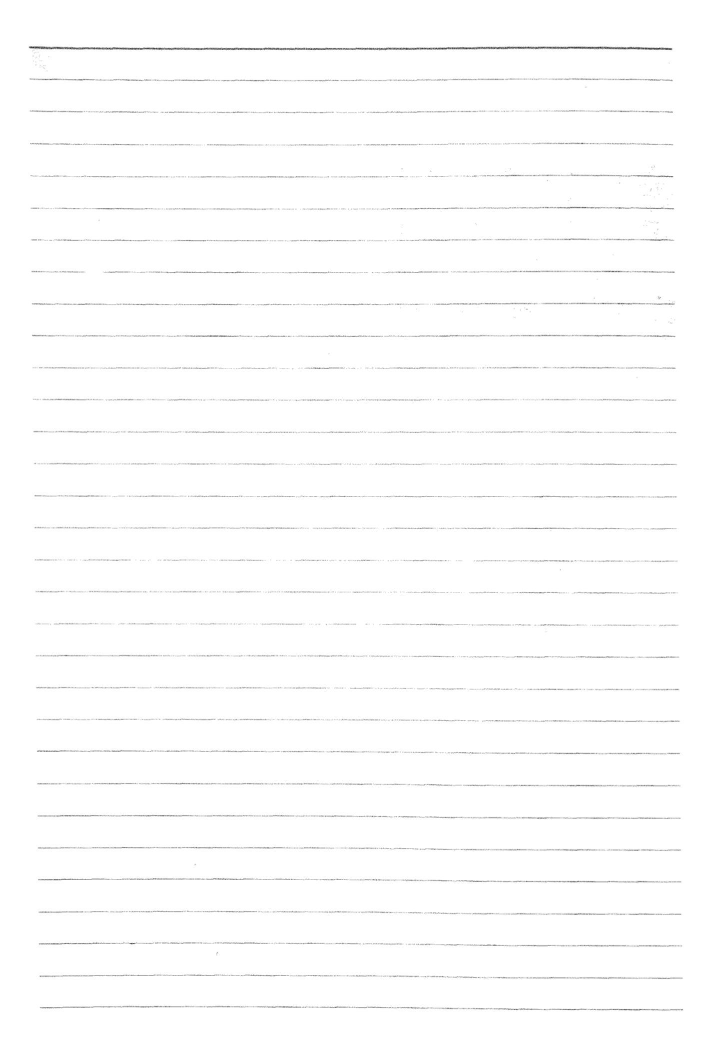
- Squat - Occurs a high speeds
  - bow of a boat rides up onto the bow wave
  - stern of a boat tends to sink
- Shallow water effects.

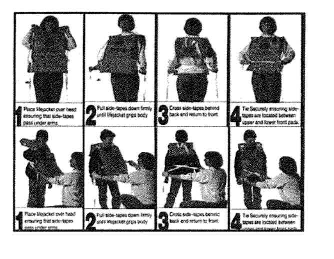
Controllable Forces

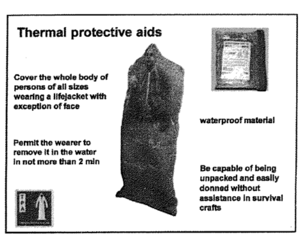
Propellers

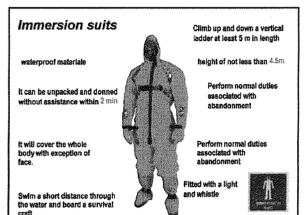
- Provides the most important source of force on a boat.
- (Usually) makes boat go forward.
- Most boats have 1 propeller.
- Forces resulting from the use of the propellers:
  - Forward (or reverse) thrust
  - Side Force

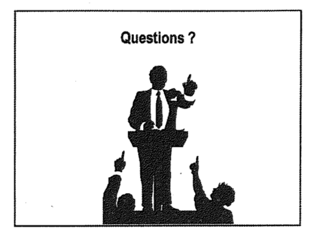


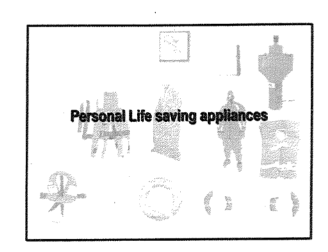



1 Place lifejacket over head ensuring that side-tapes pass under arms.
2 Pull side-tapes down firmly until lifejacket grips body.
3 Cross side-tapes behind back and return to front.
4 Tie Securely ensuring side-tapes are located between upper and lower front pads.
1 Place lifejacket over head ensuring that side-tapes
2 Pull side-tapes down firmly until lifejacket grips body
3 Cross side-tapes behind back and return to front.
4 Tie Securely ensuring side-tapes are located between


Thermal protective aids
Cover the whole body of persons of all sizes wearing a lifejacket with exception of face
Permit the wearer to remove it in the water in not more than 2 min
waterproof material
Be capable of being unpacked and easily donned without assistance in survival crafts

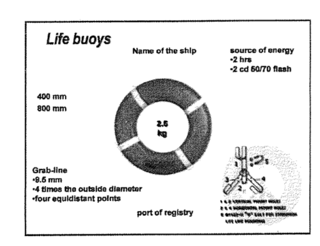

Immersion suits
waterproof materials
It can be unpacked and donned without assistance within 2 min
It will cover the whole body with exception of face.
Swim a short distance through the water and board a survival craft
Climb up and down a vertical ladder at least 5 m in length
height of not less than 4.5m
Perform normal duties associated with abandonment
Perform normal duties associated with abandonment
Fitted with a light and whistle

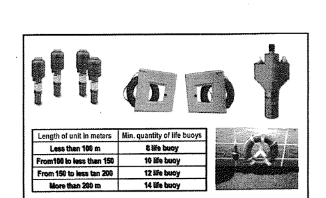




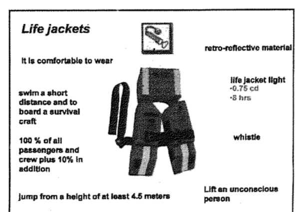
General requirements - PFD

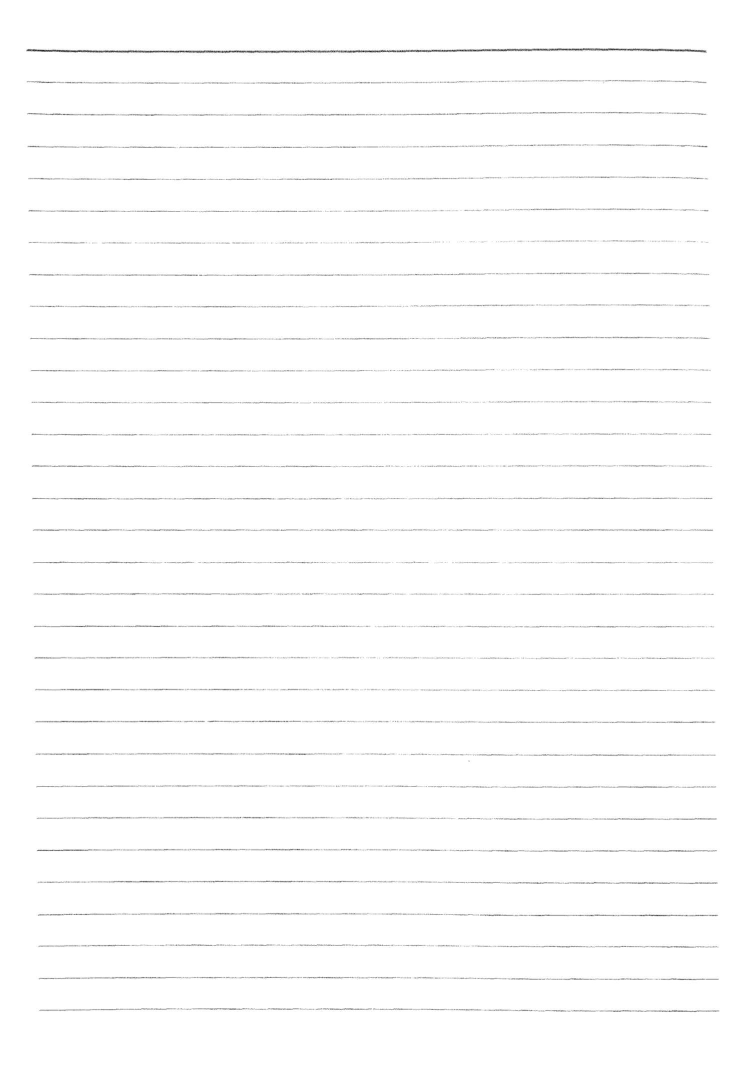
- Be constructed with workmanship.
- Where applicable, be rot-proof, corrosion-resistant, and not be unduly affected by seawater, oil, or fungal attack.
- Where exposed to sunlight, be resistant to deterioration.
- Be of a highly visible color on all parts.
- Be fitted with retro-reflective material.
- Be clearly marked with approval information, including the administration which approved





Length of unit in meters	Min. quantity of life buoys
Less than 100 m	8 life buoy
From100 to less than 150	10 life buoy
From 150 to less tan 200	12 life buoy
More than 200 m	14 life buoy





Launching arrangements

- Remove the tarpaulin from the boat.
- Release the boat lashings.
- Secure painter in painter fitting.
- Check hook release gear in accordance with the instruction and operating manual.
- Swing the boat out from its cradle to its on-board loading position.
- Check crane/davits in accordance with the davit operating manual.
- The crew must board and balance the boat.

- Swing engine down, make ready, and start up decoupled.
  Note: The engine must not be allowed to run for more than one minute with the boat un-launched. During easing off, the engine must be swiveled fully towards the ship's side of the boat.
- Easing off. - Make sure that the crew members have taken up their correct positions
- when the boat is launched: One person at the helm, one at the hook release gear and one in front at the painter.
- When the boat is on the water, release the lifting ring and hoist rope immediately in accordance with the hook release gear instruction and operating manual.
- Finally release the boat using the painter fitting in the bow to allow the boat to be maneuvered away from the ship.

Recovery arrangements

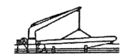
- Manoeuvre the boat alongside the ship so that the painter can be taken on board.
- Secure the painter in the painter fitting.
- Maneuver the boat to a position immediately below the hoist rope with lifting ring. Maneuvering can be performed using both the painter and the engine.
- Hook the lifting ring onto the release gear and begin to hoist the boat as soon as possible.
  Note: See hook release gear instruction and operating manual.
- Stop the engine
- When the boat has been hoisted to its taking on-board position, swing the engine up.
- The crew can now leave the boat.
- Bring the boat to stowing position and then make it ready again

Release mechanism

A fast rescue boat should, if possible, be equipped with an easily operated fixed single-point suspension arrangement or equivalent

1. All hooks are released simultaneously
2. The mechanism have two release capabilities :
   - An off load release ,when there is no load on the hooks.
   - An on load release ,which will works with a load on hooks.
3. Where single fall and hook is used for launching a rescue craft in such case release the craft, only when it is fully waterborne





Safety of crew while lowering/hoisting FRB

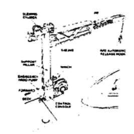
- Crew should wear proper clothing and life jackets
- The lowering gear and chocks should be inspected and lubricated
- When turning out davits (inboard or outboard) crew shall be aware of moving parts
- Engine should be started and run ahead and astern (don't heat it up)

- Personal should remain seated while lowering and hoisting the boat.
- keeping their hands inside the gunwale to avoid them being crushed against the ship side
- During drills life buoys with lifeline should ready in hand at the embarkation position
- When on/off load mechanism is used, special care should be exercised to ensure the hook is fully engaged before hoisting
- Hand operating gear shall be examined and secured

Lunching and Recovery Arrangements

Lunching and Recovery Arrangements

- Each fast rescue boat shall be served by a suitable launching appliance. fast rescue boat is intended to be launched and retrieved even under severe adverse weather conditions, and shall be:
  - In a state of continuous readiness for launching in not more than 5 min



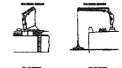
Lunching and Recovery Arrangements

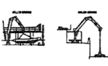
- In a position suitable for launching and recovery so that neither the rescue boat nor its stowage arrangements will interfere with the operation of any survival craft at any other launching station, and the rescue boat embarkation
- launching arrangements shall be such that the rescue boat can be boarded and launched in the shortest possible time.



Lunching and Recovery Arrangements

- All rescue boats shall be capable of being launched, where necessary utilizing painters, with the ship making headway at speeds up to 5 knots in calm water.
- Recovery time of the fast rescue boat shall be not more than 5 min in moderate sea conditions when loaded with its full complement of persons and equipment.





Lunching and Recovery Arrangements



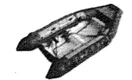
- Rescue boat embarkation and recovery arrangements shall allow for safe and efficient handling of a stretcher case.
- Rescue boat arrangements shall be such that the rescue boat can be boarded and launched directly from the stowed position with the number of persons assigned to crew the rescue boat on board.

Launch and recovery arrangements

To ensure correct launching the crane instructions must be strictly observed.

<u>The following instructions apply only to the boat itself</u>

- Each buoyancy compartment should be fitted with a non-return valve for manual inflation and means for deflation. A safety relief valve should also be fitted unless the Administration is satisfied that such an appliance is unnecessary.



The inflated fast rescue boat should be maintained at all times in a fully inflated condition



fast rescue boat equipment-1

1. buoyant oars and crutches
2. buoyant bailer
3. a binnacle containing an efficient compass with suitable means of illumination
4. a sea-anchor (10m in length)
5. a painter of sufficient length., attached to the release device
6. one buoyant line, not less than 50 m in length, of sufficient strength to tow a life raft
7. one waterproof electric torch suitable for Morse signalling

fast rescue boat equipment-2

8. one whistle or equivalent sound signal
9. a first-aid outfit in a waterproof case
10. two buoyant rescue quoits, attached to not less than 30 m of buoyant line
11. a searchlight capable of effectively illuminating a light-coloured object at night having a width of 18 m at a distance of 180 m for a total period of 6 hours and of working for at least 3 hours continuously
12. unless a radar transponder is stowed in the fast rescue boat, an efficient radar reflector
13. thermal protective aids sufficient for 10% of the number of persons the rescue boat is permitted to accommodate or two, whichever is the greater.

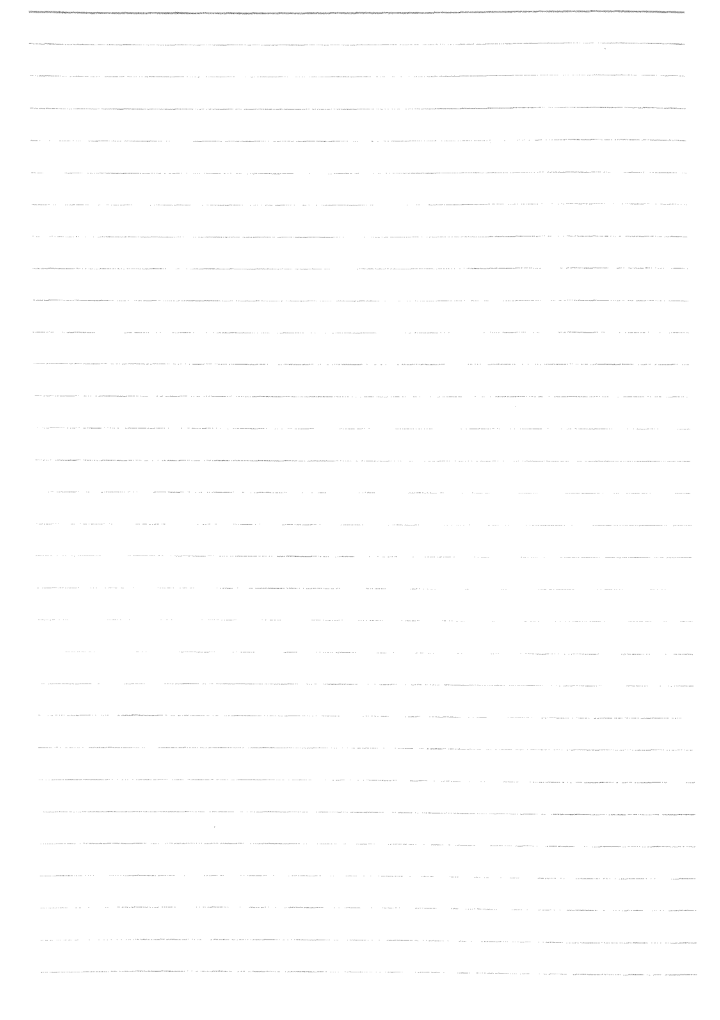
Dress

- an immersion suit, or an anti-exposure suit of an appropriate size, shall be provided for every person assigned to crew the rescue boat
- Personnel must not sit on the inflatable collar forward of the coxswains console to avoid the danger of hypothermia or drowning. They must carry a seaman's knife, which should be properly sheathed to avoid damage to the buoyancy tube



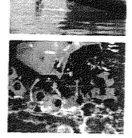
Questions ?





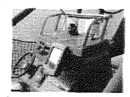
- Sufficient mobility and maneuverability in a seaway to enable
  - persons to be retrieved from the water,
  - marshal life rafts and tow the largest life raft carried on the ship when loaded with its full complement of persons and equipment or its equivalent at a speed of at least 2 knots





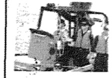
Fitted with an inboard engine or an outboard motor. It should be steered by a wheel which is remote from the rudder, water jet and outboard motor and an approved form of emergency steering should be fitted

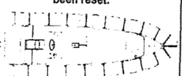


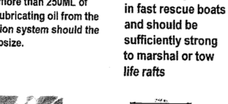




- Each engine or motor in a fast rescue boat should stop automatically or be stopped by the helmsman's emergency release switch should the boat capsize.
- When the boat has righted, each engine or motor should be capable of being restarted, provided the helmsman's emergency release, if fitted, has been reset.

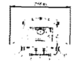




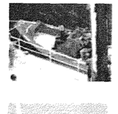


- The fuel and lubricating oil systems should be so designed as to prevent the loss of more than 250ML of fuel or lubricating oil from the propulsion system should the boat capsize.
- Arrangements for towing should be permanently fitted in fast rescue boats and should be sufficiently strong to marshal or tow life rafts



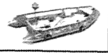


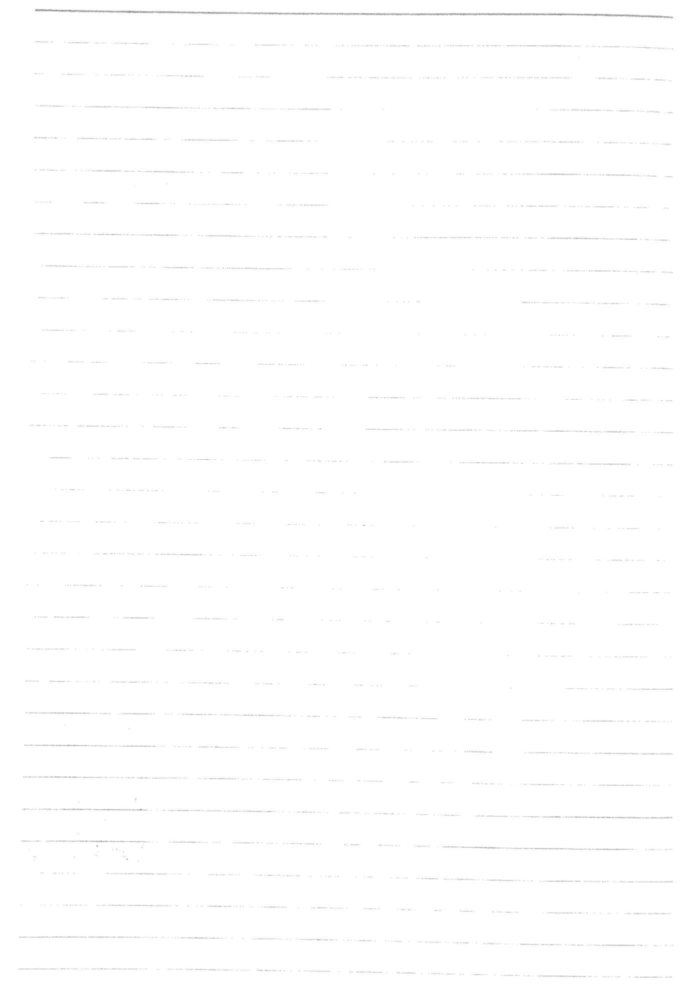
- fast rescue boats should be so constructed as to be capable of withstanding exposure:
  - when stowed on an open deck on a ship at sea;
  - for 30 days afloat in all sea conditions.





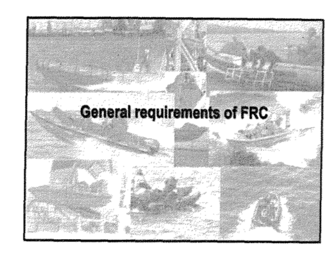
- fast rescue boat should be provided by
  - a single tube subdivided into at least five separate compartments of approximately equal volume
  - or two separate tubes neither exceeding 60% of the total volume
  - The buoyancy tubes should in the event of any one of the compartments being damaged, the intact compartments should be able to support the number of persons which the fast rescue boat is permitted to accommodate

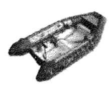




In a rescue situation, you need to

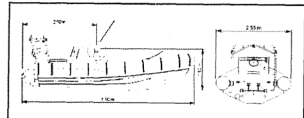
- Assess the situation
- Stabilise the situation
- Reassess the situation
- Decide on a plan of action
- Communicate plan to team
- Allocate tasks and ensure everyone understands
- Execute plan
- Review incident







Fast rescue boats may be either of rigid, inflated or rigid/inflated construction



- be of a length adequate for their intended use
- be capable of carrying at least five seated persons and a person lying down.

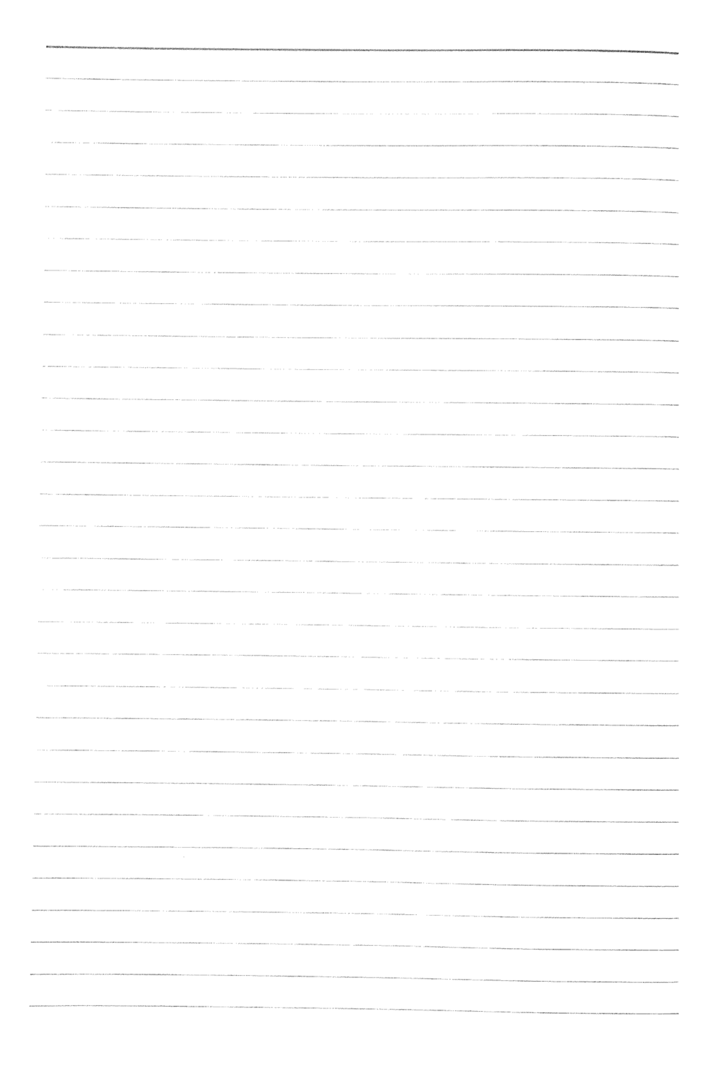
- Should be self-righting or capable of being readily righted by its crew.
- Should be provided with a bow cover extending for not less than 15% of its length.



Should be capable of manoeuvring, for at least 4 hours, at a speed of at least 20 knots in calm water with a suitably qualified crew of at least 3 persons and at least 8 knots with a full complement of persons and equipment.







Principle of Victim's Best Interest

- Don't make the situation worse.
- No action by rescuers should place victims in more danger than they were already in:
  - There's no point in making the situation worse
  - The victim won't thank you for it
  - You have a duty of care to the victim

Principle of Simplicity

- Keep it simple, keep it fast
  - Simple solutions are quicker to implement
  - There is less to go wrong
  - Other people will understand them easier
  - They require less additional equipment
  - They tend to be more flexible

Principle of Maximum Usefulness

- Place yourself where you're going to be most useful
- As a rescuer you should always be where you'll be needed the most
  - This applies while paddling down the river as well as in rescue situations
  - Where you're needed most will change so your position should be as flexible as possible

Principle of the Clean Line

- Ropes are dangerous around water
- Ropes and water are a bad mix
  - Knots, or handles or other things attached to ropes
  - If they get hooked up or caught on rocks in a current, the object on the other end (possibly the victim) will drift towards the bottom

Principle of Presumed Insanity

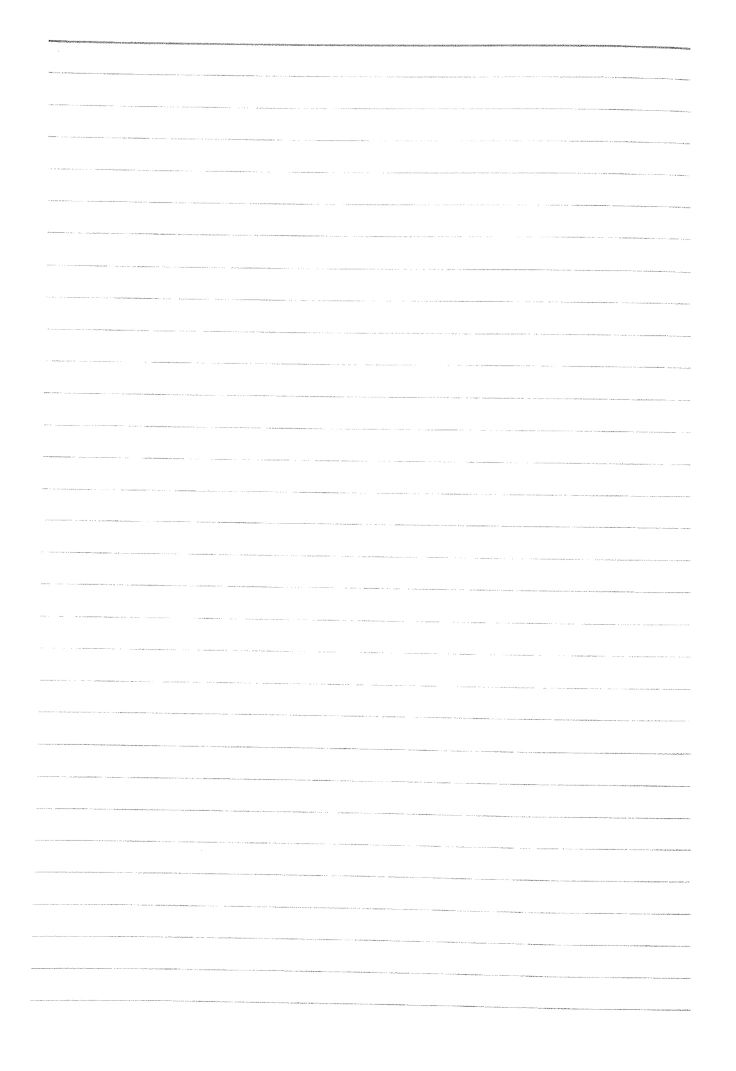
- The assumption must be that the victim is a homicidal maniac whose only mission in life is to drown you

What rescue kit would/should you have available at all time ?

Yourself

Other people

Anything else that might be useful



Emergency plan

Introduction to emergency plan

We learnt as soon as we joined the ship that Muster Lists are displayed at various conspicuous places on board and that they specify the details of general alarm signal with instructions regarding immediate action that will be needed upon hearing the alarm.

Why plan for contingencies

- Appropriate actions to be taken.
- Primary actions to be taken in all contingencies.
- The plan takes into account the formation of an emergency squad, which jumps to action in every emergency and directs the controlling and monitoring action.

The emergency squad is somewhat like the fire brigade. It gets into action for every emergency and then gets other services to help as necessary

basic actions for any emergency

- The responsible persons must be informed of the situation.
- All persons on board should be warned through alarms or the internal communication system.
- All persons upon knowing about the emergency must act quickly follow the process outlined in the plan.

After having taken the initial actions, the subsequent action has to be based on the particular details of the emergency

Rescue Basics Principles

Principle of Personal Safety

- Look after yourself; you're worse than useless if you become a victim too!
- You should not take unnecessary or unjustifiable risks:
  - It's not good for you
  - The situation will escalate
  - Additional rescuers will be required
  - Your victim won't get saved any quicker
  - You won't get to the pub as quickly

NOTE: Can be difficult at water, because the victim is often your friend

Treatment (by rescuers)

Treatment for Hypothermia:

1. Remove wet garments.
2. Protect against further heat loss and wind chill.
3. Maintain patient in horizontal position.
4. Avoid rough handling.
5. Monitor the core temperature.
6. Monitor the cardiac rhythm.

Re-warming

Re-warming MILD Hypothermia

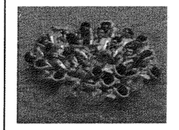
- Active external methods:
  - Warm blankets
  - Heat packs
  - Warm water immersion (with caution)
- Active internal methods:
  - Warmed IV fluids

Re-warming SEVERE Hypothermia

- Active external methods:
  - Warm blankets
  - Heat packs
  - Warm water immersion (with caution)
- Active internal methods:
  - Warmed IV fluids
  - Warmed, humidified oxygen

Treatment (by survivals)

Group Huddle



HELP position



Muster list

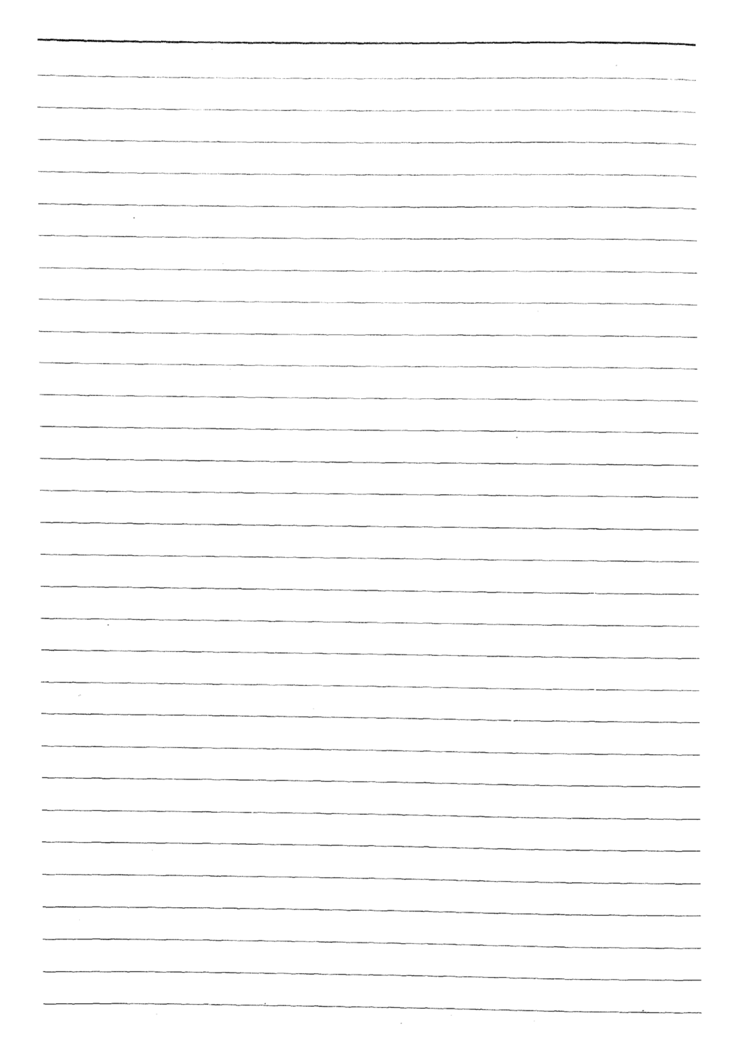
What is it?

Muster list and emergency instructions

On all ships, clear instructions to be followed in an emergency must be provided to everyone on board and muster lists and emergency instructions must be exhibited in conspicuous places throughout the ship.

Content of muster list

- The muster list shall specify details of the general alarm signals, the location to be taken by crew and passengers when the alarm is sounded.
- The list will specify how the order to abandon ship will be given.
- The muster list shall show the duties assigned to different members of crew.
- Instructions shall be drawn up in the languages required by the ship's flag State and in the English language.



Temperature Regulation

Humans are warm-blooded mammals who maintain a constant body temperature.



Hypothermia

Definition of Hypothermia:

- CLASSIC DEFINITION: A state of low body temperature, specifically a low CORE temperature (< 35° C).
- ALTERNATIVE DEFINITION: Unintentional decrease of around 2° C from the "normal" CORE temperature

Signs and Symptoms

MILD Hypothermia

- Lethargy
- Shivering
- Lack of Coordination
- Pale, cold, dry skin
- Early rise in blood pressure, heart, and respiratory rates.

SEVERE Hypothermia

- No shivering
- Heart rhythm problems
- Cardiac arrest
- Loss of voluntary muscle control
- Low blood pressure
- Undetectable pulse and respirations

Predisposing Factors to Hypothermia

- Patient age.
- Patient health.
- Medications.
- Prolonged or intense exposure.
- Weather conditions.
- Radiation.
- Conduction.
- Convection.
- Evaporation.
- Respiration.

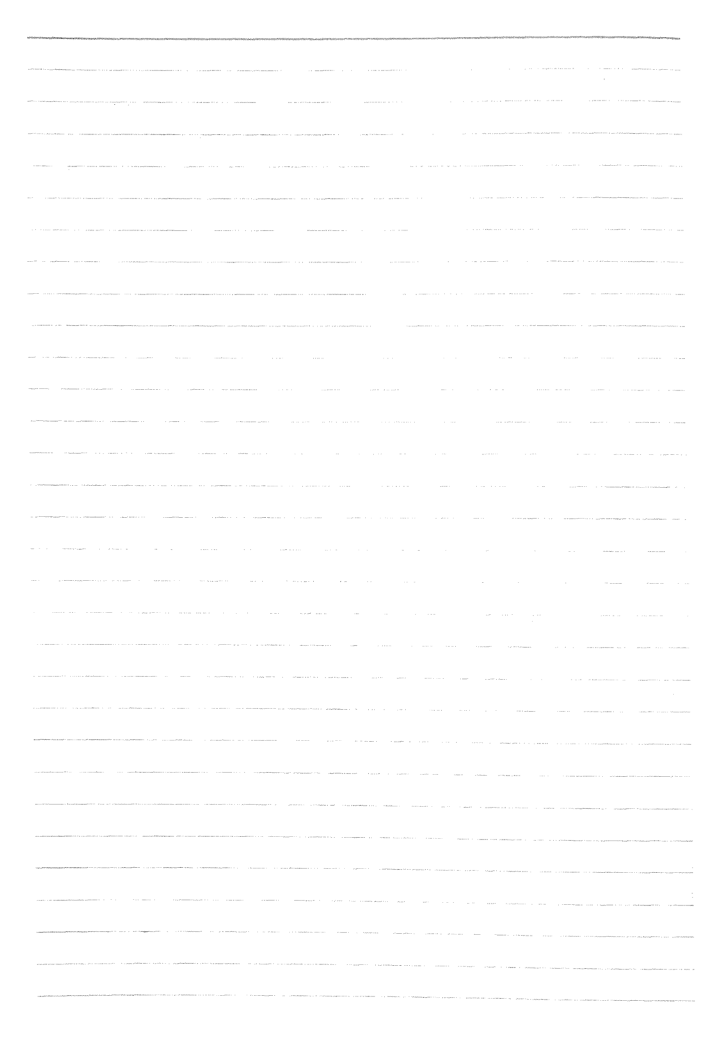
Approximate likely times of survival of those immersed in light clothing

Water Temp. (C°)	Survival Time
0°	20 minutes to 1.5 hours.
5°	30 minutes to 2.5 hours.
10°	1 hour to 4 hours.
15°	Unconsciousness may occur about 2 hours after immersion but death may not result even after several hours.
20°	Neither unconsciousness nor death may result from cold exposure.

Prevention

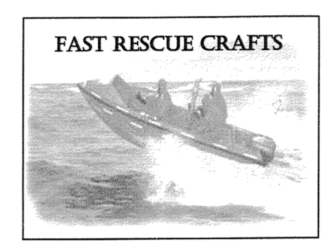
Preventive Measures:

- Warm dress
- Plenty of rest
- Adequate diet
- Limit Exposure



Time table

Proficiency in Fast Rescue Boat Course			
	0900 - 1030	1100 - 1200	1230 - 1400
1st Day	Introduction Emergencies and cold-water survival Muster list & emergency plan Personal survival equipments	General Requirements of fast rescue boat Equipments of FRB	Methods of Launching and recovery of FRB Stowage of FRB
2nd Day	Handling FRB (the use of safety, navigational and emergency equipment of FRB) The use of locating and communications equipment	Handling FRB in prevailing and adverse weather and sea condition Righting capsized FRB	Practical Training Handling fast rescue boats in prevailing sea condition Methods of starting the engine of FRB Emergency repairs and maintenance, normal inflation and deflation of buoyancy compartments
3rd day	Search patterns and environmental factors affecting their execution	Recover and care of persons from the water and transfer rescue to helicopter and mother ship	Practical Training Conduct Search and rescue pattern Recovery of casualties from the water



Day (1) outline

- Emergencies and cold-water survival.
- Muster list.
- Emergency plan.
- General requirements of FRC.
- Lunching and Recovery Arrangements.
- Personal Life saving appliances.

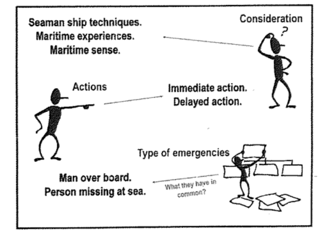
Emergencies and cold-water survival

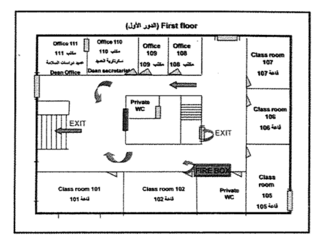
What is the emergency?

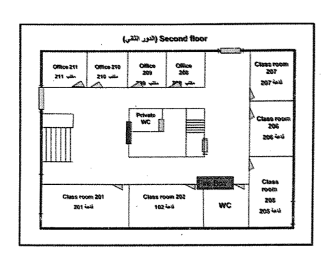
Emergency definition:

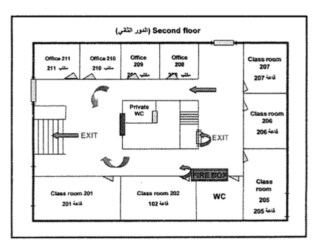
It is any direct / indirect action and can effect;

- **Personals**
- **Property**
- **Environment**









COURSE AIM

Provides participants who are required to take charge of a fast rescue craft (FRC) with the knowledge and skills necessary to safely and competently launch, maneuver and recover an FRC.

Objectives

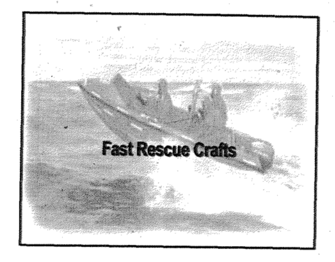
On completion of this activity, participants will be able to demonstrate a competence in the theory and practice of the following:

- Craft description and checks
- Crew dress and equipment
- Crew responsibilities
- Capsize procedures
- Launch and recovery
- Man overboard procedures
- Helicopter recovery
- Search patterns
- maintenance
- Casualty handling

COMPETENCY: Participants are required to pass an assessment of practical skills and a written or verbal examination of theory.

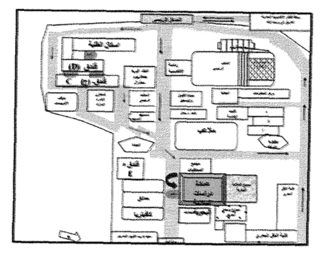
COURSE DURATION: The course is conducted over three (3) days.

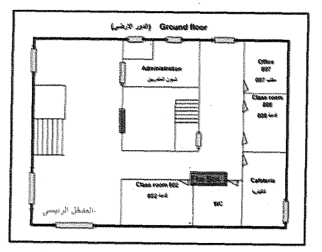
METHOD OF TRAINING: Classroom theory sessions followed by practical exercise.

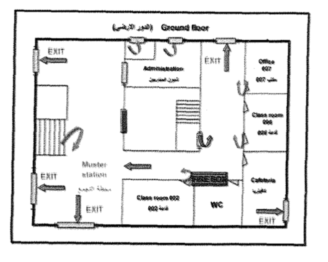


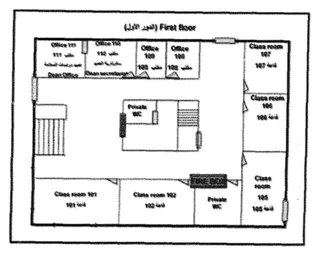
Safety roles

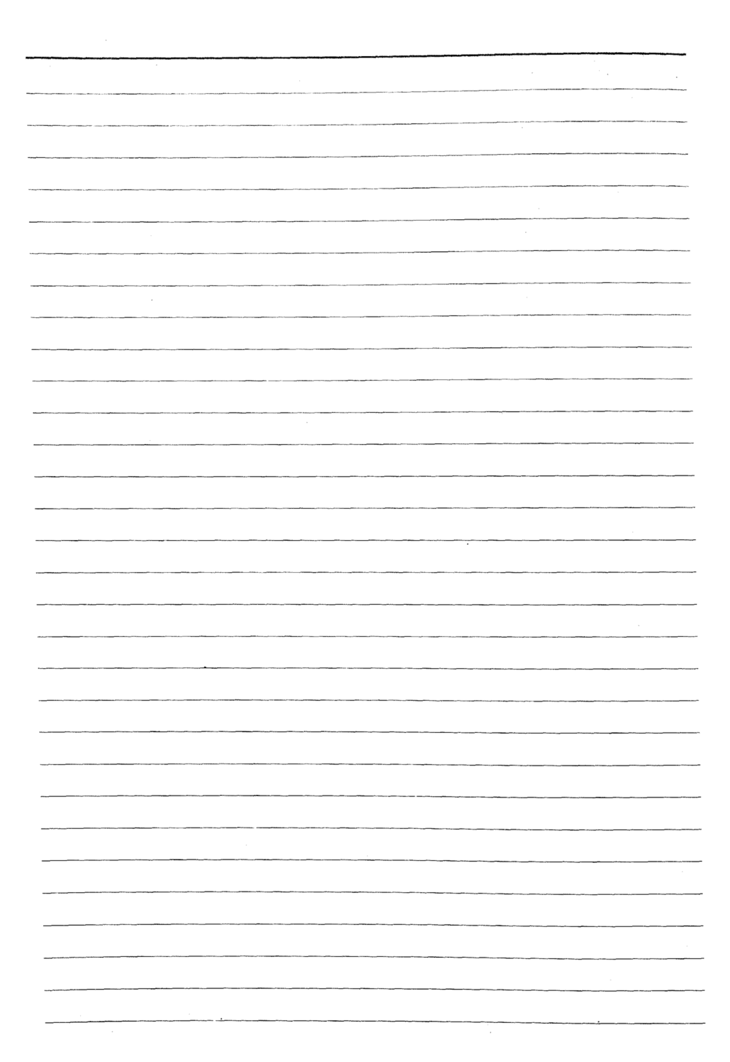
- Emergency Signals
- Exits & Escape Routes
- Muster areas
- Location of fire fighting equipment
- Hazardour areas
- Accident reporting & first aid
- Contact person
- Coffee and water areas
- Lunch
- Toilet facilities
- Alcohol
- Clothing (PPE)
- Smoking areas
- Mobile phones
- Personal items - security
- Training area – equipment care











References

HMSO Publication Center. (1995). *BR 67 Admiralty Manual of Seamanship*, London: HMSO

International Aeronautical and Maritime Search and Rescue Manual (IAMSAR), IMO/ ICAO, (2006)

International Convention of Safety of Life at sea (SOLAS) consolidated edition, 2007, IMO, (2007)

International Convention on Standards of Training, Certification and Watchkeeping for seafarers, 1978, as amended in 1995 and 1997 (STCW Convention), IMO, (2001)

International Life saving Appliances Code (LSA Code), IMO, (2003)

International Maritime Organization (1989, October 19). *Resolution A.656 (16))*: *Fast Rescue Boats.* London: Author

International Maritime Organization (1994, November 4). *Resolution A.771 (18)): Training requirements for Crews of Fast Rescue Boats.* London: Author

1. Put the engine in neutral and switch the key switch to 'off'.
2. Put the engine in neutral, disconnect the fuel line and allow the carburetor to run dry (see note).

Emergency Method

The cut-out switch is actuated by pulling the Kill cord from the switch. It should not be used as a routine method of stopping the engine, but may be tested from time to time provided that the gear shift/throttle lever is put in neutral first.

To Go Ahead

1. Steer slightly away from the ship while on the boat rope.
2. Release the neutral interlock and move the gear shift/throttle lever smoothly and firmly forward to engage ahead gear.
3. Increase speed by continuing the forward movement. When the weight is off the boat rope the coxswain orders it to be slipped.
4. Once the boat is planning throttle back to the required operating speed. The engine must not be allowed to race, particularly when it is cold.
5. When under way the coxswain should keep his hand on the gear shift/throttle lever to be able to change speed quickly to adjust to sea and wind conditions.

To Go Astern

1. Move the gear shift/throttle lever to the neutral/idling position - pause until the engine drops to idling speed - then move the lever smoothly and firmly backwards to engage astern gear.
2. Increase speed by continuing to move the lever backwards until the engine reaches the required speed.

Changing Gear

Always allow the engine revolutions to drop to idling speed in the neutral position before going on to engage ahead gear from astern gear or vice versa.

Checks while running. Periodically check:

1. Flow of water through the cooling water discharge.
2. Tightness of the engine clamps and bolts on the transom.
3. Fuel level of the in-use tank.

Stopping Procedures

- Normal Methods. There are the following alternative methods of stopping:

- Switches for starting motor, choke and navigation lights.

Engine Starting Procedures

- **Pre-start checks. Before getting into his seat the coxswain should carry out the following pre-start checks:**

  1. Ensure the fuel tank is filled with unleaded gasoline and the correct grade oil.
  2. Shake the fuel tank to ensure the contents are thoroughly mixed and the tank vent is open.
  3. Slide fuel connector on to the motor.
  4. Prime carburetors by squeezing the primer bulb.
  5. Confirm that the pull-break coupling of the umbilical cord is firmly connected and that the water supply is available.
  6. Confirm that the gear shift is in neutral, then, if necessary, raise the fast idle lever.

- **To Start. After getting into his seat the coxswain should then:**

  1. Attach Kill cord to his leg.
  2. If out of the water - order the cooling water to be turned on. Check the flow of cooling water from the motor.
  3. Turn the starter key and run the' starter motor for not more than 10 seconds. If the engine fails to start - stop and repeat after a short pause.
  4. Release the key as soon as the engine has fired.

- **Once Started**

  1. Check the flow of cooling water through the tell-tale discharge. (If there is no cooling water, stop the engine immediately.)
  2. Reduce the engine speed to idling. An oil slick may be observed - this is normal.

- **Running Procedures and Checks**

Once the outboard motor is running and the boat is lowered in the water, fast Rescue Boat is ready to be operated.

The crew should insert a wooden or canvas Scotchman to absorb any wear from the movement of the towrope. The fast rescue boat has a towing eye plate fitted on the forefoot. If possible the tow should be connected to this eye plate if it is expected to tow either of these fast rescue boats for a long distance. The eye plate is not easily reached and in rough weather in the open sea it may be less hazardous to connect the tow to the towing bridle instead. The coxswain of the fast rescue boat under tow should try to keep the boat steering as steadily as possible.

Fast Rescue Boat engine

Engine Checks

- Outboard motor firmly bolted to the transom.
- The motor tilts freely and is down in the 'Run' position.
- The steering wheel swivels the motor easily between the stops.
- There are no obstructions resting on the control cables.
- The gear shift/throttle lever in the neutral position. It should never be forced out of neutral when the engine is stopped.
- No obstructions fouling the propeller.
- Fuel tanks full and shaken well to mix the contents.
- Fuel tanks strapped tightly into position.
- Fuel line connector correctly snapped on and fuel line is primed.
- Umbilical connection properly coupled to the engine and the recovery line secured.
- Water supply for the umbilical connection available and at the correct pressure.

Electrical

- Leads to battery terminals tight and uncorroded and the lid to battery box is firmly in place.
- Battery fully charged.
- Navigation lights and compass illumination tested.
- Kill cord fitted and spare readily available.

Controls at the Console

- Steering wheel.
- Combined gear shift and throttle lever, and fast-idle lever.
- Kill cord switch.

- **Swamping**. This may occur if the boat slows down suddenly and is overtaken by a following sea. A burst of power ahead will clear the fast rescue boat of water provided the scupper hoses - (in boats so fitted) - are streamed. Minor swamping is not dangerous, but can affect the handling of a fast rescue boat. As a matter of principle water on deck should be discharged as quickly as possible.

- **Corkscrewing**. This may occur if a fast rescue boat is being driven too fast across the sea in unfavorable weather conditions. If it starts to corkscrew a fast rescue boat is out of control and the coxswain must act immediately by reducing the speed and altering the course to bring the boat under control again.

- **Person Overboard**. In the event of someone going overboard, the coxswain must bring the boat round by the shortest possible way to a point about 5 meters upwind of the man in the water; then carry out the recovery procedure given in paragraph

If the coxswain is accidentally jerked overboard the engine will be stopped by operation of the emergency cut-out switch. A member of the crew must then take over as helmsman. After resetting the emergency cut-out switch and securing the Kill cord to his leg, he should re-start the engine and maneuver the fast rescue boat as described above.

Towing

Taking in Tow. Fast rescue boats are not designed for towing and should be employed in this role only for short periods. The fast rescue boat the weight of the tow should never be taken by the transom; when taking a tow astern the towing line must draw clear on the quarter so that it does not foul the stern drive or outboard motor. Sufficient length of towrope must be streamed to prevent snatching and the speed of tow should be kept low. When towing alongside, fenders must be placed in suitable positions to prevent damage to the GRP hull if the object under tow is low in the water. If the craft under tow bears on the buoyancy tube it must be firmly secured to reduce rubbing and great care must be taken to see that there are no projections which might tear the fabric.

Being Towed. All fast rescue boats may be towed for short periods on the boat rope bridle, but care must be taken to prevent the bridle from chafing the buoyancy tube.

drifting fast downwind and a more detailed investigation made to find the fault. The ship should be informed of the time and position of stopping and the direction and rate of drift. The crew should then take the following action:

- Tend the sea anchor line to stop it snubbing and to reduce the rate of drift.
- Bale out any water on deck.
- Try paddling (if likely to be effective in the prevailing weather).
- Have the distress signal flares available.
- Maintain radio contact with the ship.

- **Steering Jammed**. This is likely to be caused by either a bent rod in the through-tube or the remote steering cable seizing. If this occurs in narrow or crowded waters, slow down and stop immediately; this will bring the boat under control. The usual remedy is to grease the steering rod in the through-tube. If this does not free the steering inspect the steering cable linkage under the wheel.
- **Deflation of the Buoyancy Tube**. Fast rescue boats have buoyancy tubes with either 5 or 7 compartments and it is unlikely that the whole buoyancy tube will become deflated. If one or more compartments are deflated the height of the gunwale will be lowered and, in the open sea, the boat should be maneuvered to prevent water being shipped. It is preferable to bring a fast rescue boat alongside with the damaged part of the buoyancy tube outboard. Losing air out of the buoyancy tube does not affect the immediate buoyancy of a fast rescue boat. The fast rescue boat with a defective buoyancy tube is, however, much less seaworthy and repairs should be made without delay.

- **Fire**. Fire in a fast rescue boat must be dealt with quickly. Identify the area, isolate the cause and extinguish. If fire breaks out in the engine compartment or below deck:

1. Shut down all machinery.
2. Close fuel supply valve.
3. Unscrew brass fire access cap on top of the engine casing.
4. Operate fire extinguisher through the access port.
5. Allow heat to dissipate before removing cover from the engine.

- When practicable, the casualty should remain in the boat and be transferred to the care of a medical team after the boat has been hoisted into its stowage. Where this procedure is not workable the transfer should take place with the boat at deck-edge level and bowsed into the ship's side. There are various methods of removing the casualty.

Return for Hoisting in the Open Sea

- The coxswain must maneuver to pick up the boat rope and keep the fast rescue boat away from the ship's side.
- Once the boat rope has been secured he should reduce speed, allows the fast rescue boat to lie back on the boat rope and hook on to the fall.
- When hooked on he indicates to the officer on deck that the fast rescue boat is 'hooked on and ready for hoisting'.
- The engines of the boat must be stopped before the boat is hoisted since they must not be run without cooling water.
- Some engines of the some fast rescue boats have an internal cooling system and may be allowed to run for a short time until the boat is clear of the water.

Emergencies

An emergency may occur occasionally as the result of mechanical faults - such as engine failure - bad handling or inattention to correct procedures by the crew. The coxswain and crew must be aware that these incidents can happen and know what action to take in the event.

- **Engine Failure**. The immediate result of a sudden engine failure will be that the fast rescue boat stops suddenly and may fill with water over the transom. The coxswain should try to find out the cause of the engine stopping; the immediate checks to be made are:

  1. Inadvertent operation of the emergency cut-out switch.
  2. Fuel tank empty or fuel supply cut off.
  3. Ignition failure.
  4. Subsequent Action if Engine is not Re-started. If the cause cannot be found quickly, the sea anchor should be streamed to prevent the fast rescue boat

1. Crew correctly briefed, dressed and equipped.
2. Instructions on the objective and method of carrying out the operation are understood by all concerned.
3. Communications between ship and boat tested.

- The engines of fast rescue boats fitted with appropriate cooling water arrangements should be started while being lowered. Fast rescue boats not so fitted should be started as soon as the boat reaches the water.
- Once the hook has released the coxswain should steer slightly away from the ship's side and move ahead to take the strain off the boat rope.
- When ordered by the coxswain the boat rope should be released and recovered on deck. The coxswain must keep the hook clear of the boat rope after it is slipped and then increase speed and move outwards away from the ship.
- Once clear turn to the course required, but do not cross close ahead of the ship, as a breakdown or engine failure in this position would prove disastrous.

Recovery of Survivors

- A fast rescue boat should be stopped several meters upwind of the man in the water; the engine must then be put into neutral so that there is no chance of the propeller injuring the man.
- The boat should be allowed to drift down on to the survivor who, when close enough, should be lifted into the boat by two men; if the man is uninjured remember a quoits and line may be thrown to him. If the fast rescue boat has stopped in the wrong position and is drifting clear of the man it must be maneuvered upwind and the process repeated.
- Once inboard the casualty must be protected from exposure, then positioned on the port side of the fast rescue boat (see note) between the buoyancy tube and the consul, clear of the boat's slings, with his feet in the bows and his head aft. This position will ease his transfer from boat to ship, and will satisfy the medical requirement for a casualty's posture to be such that the feet are raised higher than the head.
- The boat's lifting slings ring should be placed on the side of the boat. The crew must be prepared to give basic first-aid if necessary, and in any case must report by radio the condition of the survivor(s).

requires control of the wheel and engine to be exercised separately; the sequence of control movements should be as follows:

1. Put the wheel away from the berth.
2. Bear off the bow.
3. Engage slow astern to draw the stem away from the jetty.
4. When the stern has swung out to an angle of about 20-30 degrees, put the wheel amidships to stop the swing.
5. Make a short stern board to draw clear.
6. Put the engine into neutral.
7. Put the wheel away from the berth.
8. Engage slow ahead, and watch the stem to prevent it swinging in to touch the jetty.
9. Steady on a suitable course.

Proceeding Ahead. The other method of leaving from alongside is to go ahead directly after slipping and bearing off. This is a satisfactory method provided that it is possible to bear off sufficiently to prevent the boat rubbing when being maneuvered on to her departure course. Precise engine and wheel control is required; small amounts of wheel and low engine speeds should be used until the fast rescue boat is well clear. The control movements required should be in the following sequence:

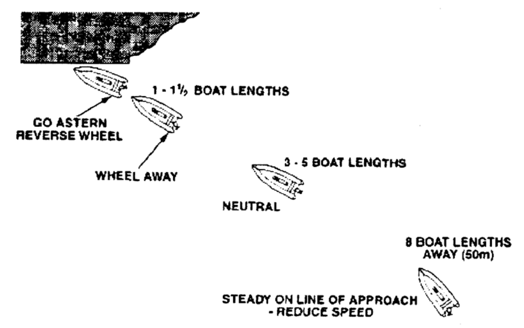
1. Bear off the boat broadside on.
2. Put on about 5 degrees of wheel away from the berth.
3. Engage slow ahead and watch the stem.
4. Steady on a course about 10-15 degrees out from the berth.
5. When clear, alter to the required course.
6. Increase speed.

Operating in the Open Sea

- Fast rescue boats should be lowered with safety. Before being lowered or leaving the ship for an open sea passage the coxswain is responsible that the fast rescue boat is fully prepared. Besides making the operator checks listed for the class of boat he should see that the following preparations are made:

The procedure for bringing a fast rescue boat alongside is as follows:

1. Approach under power at an angle to the line of the jetty.
2. At 3-5 boat lengths away put the engine into neutral.
3. When the boat has closed to about one boat length put the wheel away from the jetty.
4. As the boat begins to swing, reverse the wheel.
5. Clutch to astern and increase power as necessary to stop the boat and bring the stem towards the berth.
6. When alongside and stopped - put the clutch in neutral.

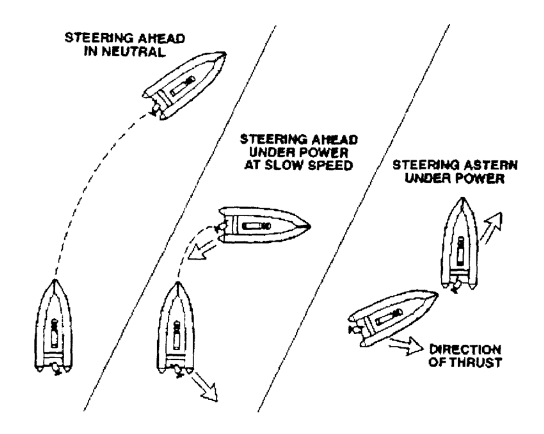


- **Leaving from Alongside**

There are two methods of making a departure from alongside in a fast rescue boat

Stern board Method. The usual method of leaving a jetty is to make a short stem board to take the fast rescue boat clear and then, when there is sufficient sea-room for the stem to swing, to go ahead and move steadily away from the berth. This method avoids rubbing the buoyancy tube along the jetty or wall. As in going alongside, leaving

must be prepared to work harder at steering the boat. Because of the leeway made at low speeds an experienced helmsman may, if there is a strong wind, decide to hold on under power until a later stage than usual, and then rely on going astern more sharply to take the way off the fast rescue boat.



- Maneuvering Astern. There are two important points to be remembered when making a stern board:

1. The stem will move in the direction in which the propulsion unit is pointing as soon as astern power is applied.

2. Water will flood over the transom if speed is allowed to build up. The helmsman must therefore be careful to put the required wheel on before engaging astern gear and not to go astern too fast. At slow speeds all fast rescue boats can be steered astern very accurately and turned in a tight circle. This is a useful feature which facilitates handling in a confined space.

Going Alongside

Maneuvering

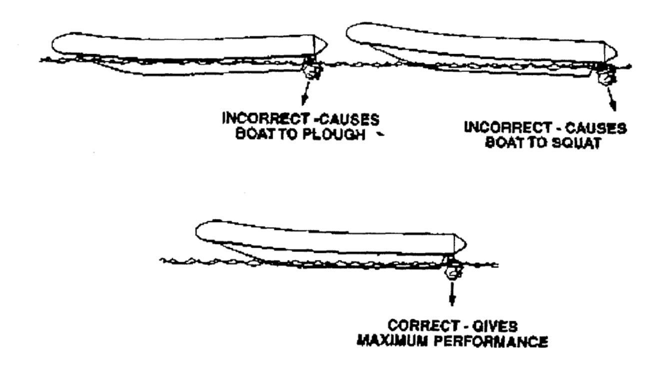
- At Slow Speed. Fast rescue boats are steered by altering the direction of the thrust or drag of the propeller. When the engine is clutched to 'ahead' or 'astern' this has the effect of adding power to the steering, but when the engine is in neutral the steering is sluggish Because the response to the direction of thrust or drag is so quick when engine power is applied, the technique of maneuvering at slow speeds is different to that required for conventional boats with rudders. The important point for the helmsman to remember is that the wheel must be put over before power is applied. When maneuvering a fast rescue boat alongside or in a restricted space, it is important to think out the control movements in advance and to make them as a series of distinct steps with the wheel movement always being made before the engine movement.

- Accelerating. Once the Ahead gear is engaged the throttle can be pushed forward firmly to give a very fast acceleration. A fast rescue boat will gain speed quickly and start to plane in a few seconds. In harbor care must be taken to conform with the speed regulations and to ensure that no damage or disturbance is caused by the wash, which is considerable. At sea this powerful acceleration is useful when the fast rescue boat is being operated as a sea boat. Speed can be rapidly and accurately adjusted to match the ship's speed and so facilitate returning for hoisting and recovery.

- Stopping. The ability to judge speed and distance in making an approach must be acquired early since it is an essential part of the skill in handling a fast rescue boat effectively. A fast rescue boat loses speed quickly when the engine is put into neutral. The distance that it will carry its way is short because fast rescue boats are comparatively light boats. If the speed of approach has been misjudged and the boat is found to be approaching too fast, damage can be prevented by using astern power; but control may be lost and another approach may have to be made.

- Maneuvering in Neutral. A fast rescue boat holds her course well while moving slowly through the water without engine power, but, being a light boat; sufficient allowance must be made for leeway if there is any wind. As soon as the engine is put into neutral a greater amount of wheel will be required and the helmsman

stern drive to different angles produces the effects shown in. The coxswain must be sensitive to the fast rescue boat's performance and trim the propulsion unit to the optimum angle of tilt. An incorrect angle of tilt will reduce both speed and range.



Boat Control

The first step towards learning to handle a fast rescue boat is to acquire a feel for the controls. The helmsman needs to know instinctively when he has moved out of neutral and engaged the ahead or astern gear, he needs to know how far he has to move the throttle to produce the power he requires, and he needs to know, without looking, where the wheel is. It is worthwhile spending some time in open water to become familiar with these controls before starting to learn how to maneuver the boat.

Visual Lookout

There is a good all-round view from the helmsman's position. Because these boats are fast a careful look-out must be kept and bold action taken to prevent close quarters situations developing. At high speed, rain and spray may make it difficult to see ahead and protection such as a visor or goggles should be used.

constant angle of heel during the turn. All fast rescue boats can be turned with complete confidence under full wheel and power in calm water. It is however unwise to maneuver as sharply as this because fasts rescue boat will skid in a hard turn and the engine may race due to cavitations. A more effective turn can be made by reducing speed before putting the wheel over and then increasing speed again when the turn is completed. In rough weather altering course across the direction of the waves requires care so that the fast rescue boat does not expose too much of its underside to a strong gust risking a capsize.

- **In a Seaway.** Manned by an experienced crew fast rescue boat can operate safely in seas up to state 6 (wave height 4-6 m) but loads and speeds may have to be reduced.
- **When running across a beam sea** the buoyancy tube on the upwind side absorbs the shock of the waves and the buoyancy tube on the downwind side gives lift contributing to stability.
- **When heading into the sea** the buoyancy tube lifts the bows to the oncoming waves and little water will be shipped. At high speed considerable stresses are placed on the bonding between the buoyancy tube and the bow; in rough weather it is advisable to reduce violent slamming by steering in a series of zigzags across the direction of the sea, and, if the waves are very steep, to reduce speed.
- **When running down** sea a fast rescue boat is less easy to handle. Constant attention to the boat's speed is required and frequent throttle adjustments are needed. The most important principle to be followed is to present a high bow to the wave which the fast rescue boat is about to overtake. The bow of a fast rescue boat lifts as the boat comes off or goes onto the plane, so by slowing down just before the moment of encounter and accelerating quickly to start planning again a fast rescue boat can be made to climb a wave rather than to plunge into it. The surfing situation should be avoided if possible as this may lead to a fast rescue boat burying her bows into the tail of the wave ahead. Lastly it must be remembered that the stern of a fast rescue boat is less buoyant than the bows, so it is inadvisable to allow a steep following wave to overtake and possibly swamp the boat over the transom. This is uncomfortable and the fast rescue boat will have to be maneuvered to drain away the water.
- **With a Payload or Passengers.** The distribution of load in a fast rescue boat affects its performance. A fast rescue boat is 'bows heavy' when stopped or proceeding at slow speed so the boat should be loaded with the weight towards the stern until it reaches sufficient speed to plane. Tilting the outboard motor or

Chapter (6)

Handling Fast Rescue Boats

Fast rescue boats are fast, seaworthy and easy to deploy. However, a high standard of skill is required to operate them, and in the hands of an inexperienced or poorly trained crew the potential for an accident is high.

Establishing Confidence

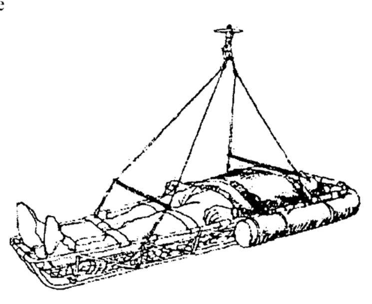
- Skill and confidence go hand in hand. It is important that the basic handling skills are acquired in calm water before putting them to the test in more demanding conditions. Coxswains and crew members under training must get the 'feel' of a fast rescue boat controls before going on to learn to operate this type of boat in the open sea.

- The instructor must concentrate on supervising details of handling performance closely, but at the same time be prepared to inspire confidence when conditions are difficult. The final assessment of a fast rescue boat coxswain's competence should be made after he has had the opportunity to demonstrate both ability and confidence by taking a fast rescue boat away from a ship at sea without immediate supervision in the boat.

Behavior and Sea keeping

- **On a Straight Course**. Fast rescue boats are light, powerful boats, which respond quickly to changes in engine power. When moving slowly a fast rescue boat has a tendency to wallow, but on reaching planning speed it adopts a horizontal attitude and becomes directionally stable. At high speed in a seaway the hull will slam into the waves causing the boat to bounce sharply, but without pitching to any great extent. At full speed the boat may develop a corkscrewing motion which can be controlled by adjusting speed.
- **When Turning**. Fast rescue boat s lean steeply inwards when turning at speed, but 'lift' from the immersed side of the buoyancy tube keeps the boat stable at a

Rescue Litter:



- Patients will in most cases be disembarked by means of a rescue Jitter.
- The evacuation of patients can be done in a special litter provided by the helicopter or in a litter provided at the site.
- Bridles are fitted to this litter and can quickly and safely hook on and off.
- The litter provided by the helicopter should be unhooked from the winch cable while the patient is being loaded.

Rescue Seat:

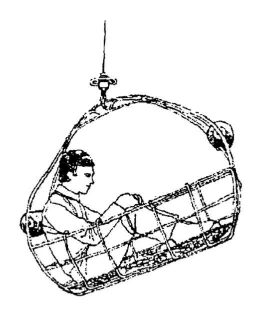


- The rescue seat looks like a three-pronged anchor with two flat flukes or seats.
- Persons to be hoisted merely sit astride on one or two of the seats and wrap their arms around the shank.
- This device can be used to winch two persons at once.

water or the deck of the vessel, if they are not injured badly enough so that a litter has to be used.

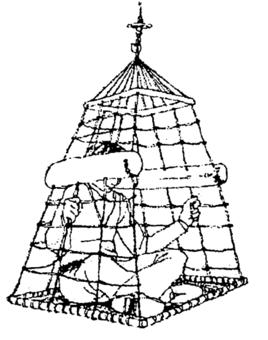
- The helicopter crew-member puts the person into the sling and conducts the winching operation.

Rescue Basket:



- Use of rescue basket does not require any special measures. To use the basket, the person merely climbs in and shall remain seated and hold on.

Rescue Net:



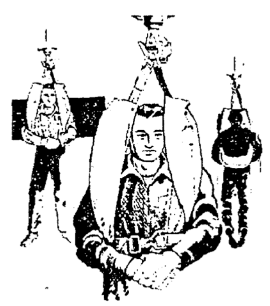
- The rescue net has a conical "bird cage" appearance and is open on one side.
- To use the net, the person merely enters the opening, sits in the net and holds on.

Assistance by helicopter:

- A helicopter may be used to supply equipment and rescue or evacuate persons.
- The radius of helicopter operation usually varies up to 300 nautical miles from base, but it can be greater especially with air-to-air refueling.
- Lifting capacity is between one and up to 30 persons depending on the size and type of aircraft.
- Rescue operations involve helicopter crew risks, which should be minimized. It is therefore essential to evaluate the seriousness of the situation, and to ascertain the need of the helicopter assistance.
- The helicopter's mass may be a factor limiting the number of survivors taken aboard each trip. It is may be necessary to reduce the weight of helicopter by removal of non-essential equipment.
- For evacuation of persons, the end of the winching cable may be provided with a rescue sling, basket, net litter or seat.
- Experience has shown that when winching a person suffering from hypothermia, especially after immersion in water, a rescue basket, stretcher or double strop should be used to keep the person in a horizontal position, since winching in a vertical position may cause severe shock or cardiac arrest.

Rescue sling:

- The most widely used means for evacuating persons is the rescue sling.
- Slings are suited for quickly picking up uninjured persons, but are unsuitable for persons with injuries.
- The sling is put on in much the same way as one puts on a coat. Ensuring that the loop of the sling passes behind the back and under both armpits.
- The person using the sling must face the hook. Hands should be clasped in front or placed at the side of the body.



Double Lift Methods:

- Some SAR helicopters use the double lift method which consists of a normal sling and a seating belt manned by a helicopter crew-member.
- This method is suitable for pick-up of incapacitated persons from land,

PATTERN 2
Parallel track search – 2 ships

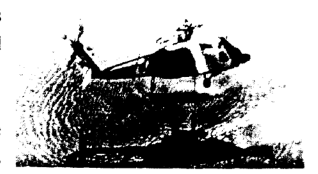
PATTERN 3
Parallel track search – 3 ships

PATTERN 4
Parallel track search – 4 ships

PATTERN 5
Parallel track search – 5 or more ship:

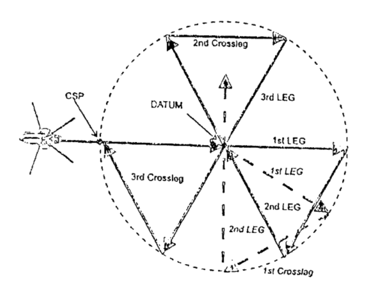
Helicopter Rescue

Helicopters are the most common type of rescue vehicles used in any offshore and maritime related accident aside from other rescue vessels because of their versatility. Helicopter should be used whenever possible.



In a maritime accident, rescue helicopters are suitable for rescue in heavy seas or in locations where surface facilities are unable to operate.

Sector search



Sector pattern: single-unit (VS)

- Most effective when the position of the search object is accurately known and the search area is known
- Used to search a circular area centered on a datum point
- A suitable marker may be dropped at the datum position and used as a reference or navigational aid marking the center of the pattern
- The search pattern radius is usually between 2 NM and 5 Nm, and each turn is 120°, normally turned to starboard

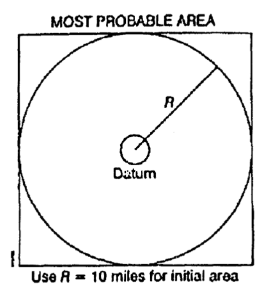
Parallel sweep search

- Multiple vessels may be used as shown opposite:
  - Parallel sweep: for use by two ships
  - Parallel sweep: for use by three ships
  - Parallel sweep: for use by four ships
  - Parallel sweep: for use by five or more ships

Searching area

If the search must commence immediately, assume $R = 10$ NM

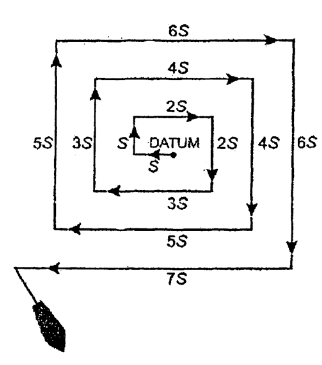
- **Plot the search area:**
  - Draw a circle centered on datum with radius R
  - Using tangents to the circle, form a square as shown below
  - If several facilities will be searching at the same time, divide the square into sub-areas of the appropriate size and assign search facilities accordingly



Search patterns

Expanding square search (*SS*)

- Most effective when the location of the search object is known within relatively close limits
- The commence search point is always the datum position
- Often appropriate for vessels or small boats to use when searching for persons in the water or other search objects with little or no leeway
- Accurate navigation is required; the first leg is usually oriented directly into the wind t minimize navigational errors



Expanding square search (SS)

- Most search patterns consist of parallel tracks or sweeps covering a rectangular area. The distance between adjacent tracks is called the track spacing
- Recommended uncorrected track spacing for merchant vessels are provided in the table following this discussion. Correction factors based on weather conditions and search object are provided in the table after the track spacing table. Multiplying the uncorrected track spacing (S_u) by the appropriate weather correction factor (f_w) produces the recommended track spacing (S):

$$S = S_u \times f_w$$

- Changes in weather, number of assisting craft, etc. may occur, making it prudent to alter the track spacing.
- The SMC must ensure that all searching ships and aircraft maintain safe separations from one another and accurately follow their assigned patterns

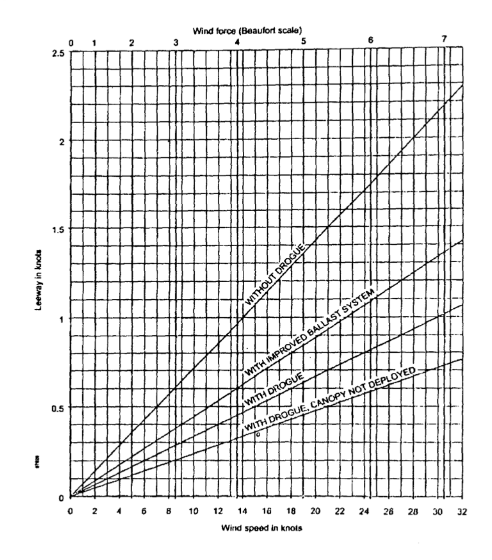
Recommended track spacing (S_u) for merchant vessels

	Meteorological visibility (nautical miles)				
Search object	**3**	**5**	**10**	**15**	**20**
Person in water	0.4	0.5	0.6	0.7	0.7
4-person liferaft	2.3	3.2	4.2	4.9	5.5
6-person liferaft	2.5	3.6	5.0	6.2	6.9
15-person liferaft	2.6	4.0	5.1	6.4	7.3
25-person liferaft	2.7	4.2	5.2	6.5	7.5
Boat <5 m (17 ft)	1.1	1.4	1.9	2.1	2.3
Boat 7 m (23 ft)	2.0	2.9	4.3	5.2	5.8
Boat 12 m (40 ft)	2.8	4.5	7.6	9.4	11.6
Boat 24 m (79 ft)	3.2	5.6	10.7	14.7	18.1

Searching speed

- To carry out a parallel sweep search in a co-ordinated manner, all facilities should proceed at the same speed, as directed by the OSC.
- This should normally be the maximum speed of the slowest ship present.
- In restricted visibility, the OSC will normally order a reduction in searching speed

- Datum position is found by moving from the incident position, or last computed datum position, the drift distance in the drift direction and plotting the resulting position on a suitable chart.



Liferaft leeway

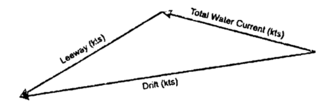
Visual Search

- Individual search patterns have been designed so that an OSC can rapidly initiate a search by one or more craft
- There will be a number of variables that cannot be foreseen. Search patterns based on visual search have been established which should meet many circumstances. They have been selected for simplicity and effectiveness

Track spacing

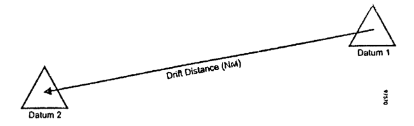
Datum

- It will be necessary to establish a datum, or geographic reference, for the area to be searched. The following factors should be considered:
  - Reported position and time of SAR incident
  - Any supplementary information such as DF bearings or sightings
  - Time interval between the incident and the arrival of SAR facilities
  - Estimated surface movements of the distressed craft or survival craft, depending on drift.
  - The datum position for the search is found as follow:
    1. Drift has two component: leeway and total water current
    2. Leeway direction is downwind
    3. Leeway speed depends on wind speed
    4. The observed wind speed when approaching the scene may be used for estimating leeway speed of liferafts by using the graph following this discussion (persons in the water (PIW) have no leeway while life raft stability and speed vary with or without the drogue or ballast.
    5. Total water current may be estimated by computing set and drift when approaching the scene
    6. Drift direction and speed is the vector sum of leeway and total current



Computing drift speed and direction from total water current and leeway

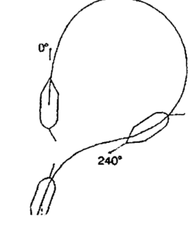
  - Drift distance is drift speed multiplied by the time interval between the incident time and, or time of the last computed datum, and the commence search time



Determining a new datum (drift distance = drift speed × drift time)

After deviation from the original course by 250^0, rudder to midship position and stopping maneuver to be initiated.

2. Scharnow turn



- Will take vessel back into her wake
- Less distance is covered, saving time
- Cannot be carried out effectively unless the time elapsed between occurrence of the incident and the commencement of the maneuver is known.

Scharnow turn

(Not to be used in an "immediate action" situation.)
Rudder hard over
After deviation from the original course by 240^0, rudder hard over to the opposite side.
When heading 20^0 short of opposite course, rudder to midship position so that ship will turn to opposite course.

3. Williamson turn

- Makes good original track line
- Good in reduced visibility.
- Simple
- Takes the ship farther away from the scene of the incident
- Slow procedure

Williamson turn

Rudder hard over (in an "immediate action") situation, only to the side of the casualty
After deviation from the original course by 60°, rudder hard over to the opposite side
When heading 20° short of opposite course, rudder to midship position and ship to be turned to opposite course

Planning the search

1. Ship's maneuvering characteristics.
2. Wind direction and sea state.
3. Crew's experience and level of training.
4. Capability of the engine plant.
5. Location of the incident.
6. Visibility level.
7. Recovery technique.
8. Possibility of having other vessels assisting.

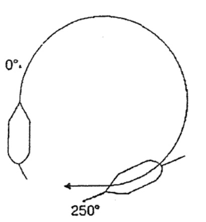
Initial action:

- Throw a life-ring over the side as close to the person as possible.
- Sound three prolonged blast of ship's whistle, hail "person over board".
- Commence recovery maneuver as indicated on next page.
- Note position, wind speed and direction, time.
- Inform master of vessel and engine-room.
- Post look-outs to keep the person in sight.
- Set off dye marker or smoke flare.
- Inform radio operator, keep updated on position.
- Stand by the engines.
- Prepare rescue boat for possible launching.
- Distribute portable VHF radios for communication between bridge, deck and lifeboat or rescue boat.
- Rig pilot ladder to assist in recovery.

Standard methods of recovery:

1. One turn ("Single turn, Anderson turn")

- Fastest recovery method.
- Good for ships with tight turning characteristics
- Used most by ships with considerable power
- Very difficult for a single-screw vessel
- Difficult because approach to person is not straight



Single turn (270^0 maneuver)
Rudder hard over (in an "immediate action" situation, only to the side of the casualty)

Recommended message when sending radio contact to mother unit:

Station to be called (X)	"BOREAS"
Your own call-sign	"THIS IS BRIO 1"
Ask for a reply	"..... OVER"
Message	"VICTIM FOUND"
End of message	"OVER AND OUT"

Use of recovery slings or Jason's cradle:



Practice indicates that it is difficult to recover a casualty horizontally, the best way is to roll a casualty onto the tube, however, some practice is needed in order to do this in a correct manner.

One of the items designed in order to facilitate horizontal recovery of people is the recovery sling or Jason's cradle. This will allow the rescuer to bring aboard heavier casualty in a horizontal position. With recovery sling, it may take a little longer before the casualty is properly positioned in the net.

Man-over-board situations:

1. Immediate action situation.
   The person over board is noticed from the bridge and action is initiated immediately.

2. Delayed action situation.
   The person is reported to the bridge by an eyewitness and action is with some delay.

3. Person missing action situation.
   The person is reported to the bridge as missing.

Ship's maneuvering characteristics:

When the possibility exists that a person has fallen over board, the crew aboard ship must attempt to recover that individual as soon as possible. However, there are some factors that will affect the speed of recovery.

Chapter (5)

Person Overboard & Search and Rescue

Fast rescue boats for Commercial ships are approved to the standards of the Safety of Life at Sea (SOLAS) convention. And these standards are in the Maritime Organization's Lifesaving Appliances (LSA) Code. The primary reason of having rescue boat is that it enables a quick response in a man-over-board (MOB) situation.

Rescue boat crew duties:

- In-charge for the preparation and launching of the boat.
- Over-all safety of the crew and casualty.
- Keep look-out.
- Search pattern for finding MOB.
- Approaching and recovery of MOB.
- Recovery of the boat.

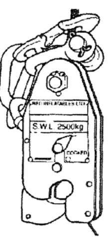
Recovery of casualty:

- Recover a casualty quickly and with caution.
- Casualty must be recovered horizontally if suspected to be suffering with hypothermia.
- The position of the casualty should be the head towards the stern and the feet and the legs to the bow. Use of stretcher is recommended.
- For head injury, the position of the casualty should be the head towards the bow and the feet to the stern.
- Coxswain should maintain the stability of the boat.

Immediate assistance in the rescue boat upon recovery:

- Keep the legs elevated to maintain enough circulation of blood to the vital organs (heart, lungs and brain).
- Check airways, breathing and circulations. Check bleedings or injuries.
- Use insulation, TPA or wrap with blankets to reduce further heat loss.
- During this course of actions, coxswain or whoever is the in-charge of radio communication should maintain radio contact to mother unit.

- **Safety Preventer** A preventer consisting of a length of chain fitted with a spring hook one end and a shackle the other is available for use as an added safety measure whenever the boat is lowered or hoisted with the hook. The preventer is attached to the fall by a shackle resting on top of the hook.



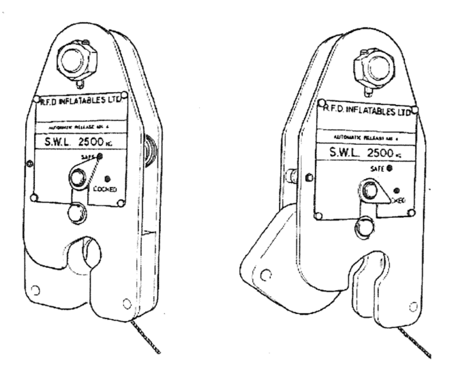
Safety of crew while lowering/hoisting FRB

- Crew should wear proper clothing and life jackets
- The lowering gear and chocks should be inspected and lubricated
- When turning out davits (inboard or outboard) crew shall be aware of moving parts
- Personal should remain seated while lowering and hoisting the boat, keeping their hands inside the gunwale to avoid them being crushed against the ship side
- During drills life buoys with lifeline should ready in hand at the embarkation position

Release Hook

- Automatic Release Hook is designed to trip automatically when the weight of the boat comes off the fall. It has two operating positions: 'safe' and 'cocked'. The ring of the boat's sling is engaged by lateral pressure on the back of the hook; this sets a pointer on the cheek-plate to 'safe' and makes the release mechanism inoperative.

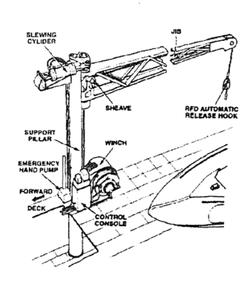
- The coxswain sets the automatic release mechanism by giving a pull on the cocking lanyard after the boat has been lowered to approximately 1 m above the top of the waves; this moves the pointer to the 'cocked' position. The hook then trips when the tension in the hoist falls below 9 kg as the boat enter the water



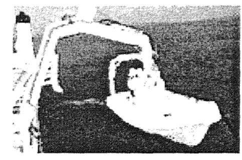
- **Load Specification and Test Requirements**. The Automatic Release Hook has a safe working load (SWL). The hook must not be dismantled on board. If a fault occurs it should be returned to stores for inspection by the manufacturer. The hook has a shelf life of one year and an in-service life of one year, after which it must be returned to the manufacturer for servicing and re-testing.

- **Maintenance.** The operating mechanism of the release hook must be regularly checked. A solvent spirit should be used to keep the equipment free from salt and dirt, and silicone grease then used to lubricate the mechanism as laid down in the maintenance schedule.

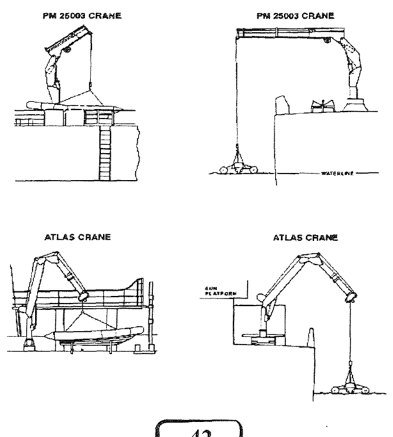
Lifting Devices



- A variety of cranes and single-arm davits are fitted onboard ships. The single-arm davit has one horizontal arm that can be slewed laterally between the boat stowage position and the ship's side. It is fitted in ships where there is sufficient space among the superstructure to permit the arm of the davit to slew without being obstructed.



- Cranes have an elevating jib that enables them to be operated in a more confined space; the jib can be raised before being slewed and so controlled to hoist the boat clear of obstructions. Some cranes are designed with folding jibs; this type is likely to be found in ships where space on deck is very limited.



1. It is of sufficient strength and rigidity to enable it to be lowered and recovered with its full complement of persons and equipment;
2. It is of sufficient strength to withstand a load of 4 times the mass of its full complement of persons and equipment at temperature of 20± 3°C, with all relief valves inoperative.
3. It is of sufficient strength to withstand a load of 1.1 times the mass of its full complement of persons and equipment at an ambient temperature of – 30°C, with all relief valves operative;

- Each fast rescue boat shall be served by a suitable launching appliance approved by the Administration. When approving such launching appliances, the Administration shall take into account that the fast rescue boat is intended to be launched and retrieved even under severe adverse weather conditions, and shall be:

1. In a state of continuous readiness for launching in not more than 5 min
2. In a position suitable for launching and recovery so that neither the rescue boat nor its stowage arrangements will interfere with the operation of any survival craft at any other launching station, and the rescue boat embarkation and launching arrangements shall be such that the rescue boat can be boarded and launched in the shortest possible time.
3. All rescue boats shall be capable of being launched, where necessary utilizing painters, with the ship making headway at speeds up to 5 knots in calm water.
4. Recovery time of the fast rescue boat shall be not more than 5 min in moderate sea conditions when loaded with its full complement of persons and equipment.
5. Rescue boat embarkation and recovery arrangements shall allow for safe and efficient handling of a stretcher case. Foul weather recovery strops shall be provided for safety if heavy fall blocks constitute a danger.
6. Rescue boat arrangements shall be such that the rescue boat can be boarded and launched directly from the stowed position with the number of persons assigned to crew the rescue boat on board.

the Administration is satisfied that such an appliance is unnecessary.

- Underneath the bottom and on vulnerable places on the outside of the rigid, inflated and rigid/inflated fast rescue boat, rubbing strips should be provided to the satisfaction of the Administration.
- Where a transom is fitted it should not be inset by more than 20% of the overall length of the fast rescue boat.
- Suitable patches should be provided for securing the painters fore and aft and the becketed lifelines inside and outside the fast rescue boat.
- The inflated fast rescue boat should be maintained at all times in a fully inflated condition.

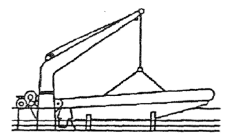
Dress

- Fast rescue boats are fast and provide no shelter from wind or sea; this adds considerably to the dangers of exposure or of being accidentally thrown overboard in a rough sea or during a violent maneuver. To minimize this, an immersion suit, or an anti-exposure suit of an appropriate size, shall be provided for every person assigned to crew the rescue boat

- Personnel must not sit on the inflatable collar forward of the coxswains console to avoid the danger of hypothermia or drowning. They must carry a seaman's knife, which should be properly sheathed to avoid damage to the buoyancy tubes.

Lunching and Recovery Arrangements

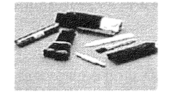
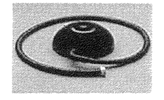
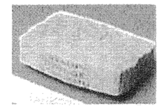
- A fast rescue boat should, if possible, be equipped with an easily operated fixed single-point suspension arrangement or equivalent.



- Hooks and fastening devices for lowering and hoisting fast rescue boats should be so designed as to have a safety factor of 6 on the ultimate strength in relation to the loads occurring in a fully loaded condition.
- Rigid, Inflated and Rigid/Inflated fast rescue boat should be constructed in such a way that, when suspended by its bridle or lifting hook:

- The normal equipment of every rigid/inflated and every inflated fast rescue boat should consist of:

  1. Buoyant safety knife.
  2. Two sponges.
  3. Efficient manually-operated bellows or pump.
  4. Repair kit in a suitable container for repairing punctures.
  5. Safety boat-hook.

- Rigid, inflated and rigid/inflated fast rescue boats should be so constructed as to be capable of withstanding exposure:

  1. When stowed on an open deck on a ship at sea;
  2. For 30 days afloat in all sea conditions.

- Fast rescue boats should be marked with a serial number, the maker's name or trade mark and the date of manufacture.

- The buoyancy of a rigid, inflated and rigid/inflated fast rescue boat should be provided by either a single tube subdivided into at least five separate compartments of approximately equal volume or two separate tubes neither exceeding 60% of the total volume.

- The buoyancy tubes should be so arranged that, in the event of any one of the compartments being damaged, the intact compartments should be able to support the number of persons which the fast rescue boat is permitted to accommodate, each having a mass of 75 kg, when seated in their normal positions with positive freeboard over the fast rescue boat's entire periphery.

- The buoyancy tubes forming the boundary of the rigid, inflated and rigid/inflated fast rescue boat should, on inflation, provide a volume of not less than $0.17 m^3$ for each person the fast rescue boat is permitted to accommodate.

- Each buoyancy compartment should be fitted with a non-return valve for manual inflation and means for deflation. A safety relief valve should also be fitted unless

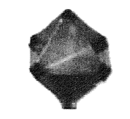
- One whistle or equivalent sound signal.
- First-aid outfit in a waterproof case capable of being closed tightly after use.



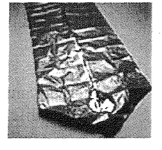
- Two buoyant rescue quoits, attached to not less than 30 m of buoyant line.



- Searchlight capable of effectively illuminating a light-colored object at night having a width of 18 m at a distance of 180 m for a total period of 6 hours and of working for at least 3 hours continuously.



- Unless a radar transponder is stowed in the fast rescue boat, an efficient radar reflector must be fitted.



- Thermal protective aids for 10% of the number of persons the rescue boat is permitted to accommodate or two, whichever are the greater.
- The normal equipment of every rigid fast rescue boat should include:

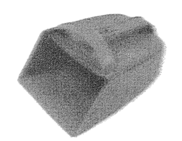


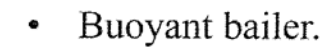




1. Boat-hook.
2. Bucket.
3. Knife or hatchet.

- Sufficient buoyant oars or paddles to make headway in calm seas, and thole pins, crutches or equivalent arrangements which should be provided for each oar and be attached to the boat by lanyards or chains.

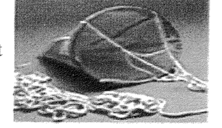




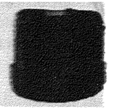
- Buoyant bailer.



- Binnacle containing an efficient compass which is luminous or provided with suitable means of illumination.



- Sea-anchor with a hawser of adequate strength not less than 10m in length.



- Painter of sufficient length and strength attached to the release device and placed at the forward end of the rescue boat.

- One buoyant line, not less than 50 m in length, of sufficient strength to tow the required life raft.

- One waterproof electric torch suitable for Morse signaling, together with one spare set of batteries and one spare bulb in a waterproof container.



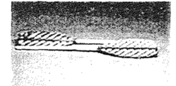
- A fast rescue boat should be fitted with an inboard engine or engines or an outboard motor or motors commensurate with its speed, size and displacement.
- A fast rescue boat should be steered by a wheel which is remote from the rudder, water jet or jets and outboard motor or motors and an approved form of emergency steering should be fitted. Petrol driven outboard motors with approved fuel systems may be fitted in fast rescue boats, but special precautions should be taken to protect the fuel tanks from the effects of an explosion.
- Each engine or motor in a fast rescue boat should stop automatically or be stopped by the helmsman's emergency release switch should the boat capsize. When the boat has righted, each engine or motor should be capable of being restarted, provided the helmsman's emergency release, if fitted, has been reset.
- The fuel and lubricating oil systems should be so designed as to prevent the loss of more than 250 *me* of fuel or lubricating oil from the propulsion system should the boat capsize.
- Arrangements for towing should be permanently fitted in fast rescue boats and should be sufficiently strong to marshal or tow the required life rafts.
- Fast rescue boats should be fitted with weather tight stowage for small items of equipment.
- If the fast rescue boat is stowed on a ship, a disengaging gear should be fitted.

Fast Rescue Boat Equipments

All items of fast rescue boat equipment, with the exception of boat-hooks which should be kept free for fending off purposes, should be secured within the rescue boat by lashings, storage in lockers or compartments, storage in brackets or similar mounting arrangements, or other suitable means.

The equipment should be secured in such a manner as not to interfere with any launching or recovery procedures. All items of fast rescue boat equipment should be as small and of as little mass as possible and should be packed in suitable and compact form.

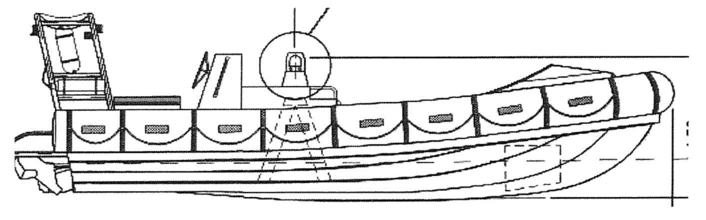
The normal equipment of every fast rescue boat should consist of:



- Be capable of carrying at least five seated persons and a person lying down.

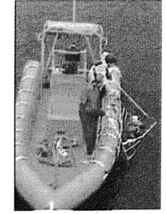


- Unless the fast rescue boat has adequate sheer, it should be provided with a bow cover extending for not less than 15% of its length (Fig (3)), and be self-bailing or capable of being rapidly cleared of water.



- Fast rescue boats should be capable of maneuvering, for at least 4 hours, at a speed of at least 20 knots in calm water with a suitably qualified crew of at least 3 persons and at least 8 knots with a full complement of persons and equipment.

- Fast rescue boats should have sufficient mobility and maneuverability in a seaway to enable persons to be retrieved from the water, marshal life rafts and tow the largest life raft carried on the ship when loaded with its full complement of persons and equipment or its equivalent at a speed of at least 2 knots.



Chapter (4)

General Requirements of Fast Rescue Boats

Application

At least one of the rescue boats on a Ro-Ro passenger ship shall be a fast rescue boat In addition; fast rescue boats are widely used on board Mobile offshore drilling units for rescue and operational purposes



At least two crew members of each fast rescue boat shall be trained and drilled regularly having regard to the Seafarers Training, Certification and Watch keeping (STCW) Code and recommendations adopted by the IMO, including all aspects of rescue, handling, maneuvering, operating these craft in various conditions, and righting them after capsize.

General Requirements

Fast rescue boats may be either of rigid, inflated or rigid/inflated construction and should:

- Be of a length adequate for their intended use;
- A fast rescue boat should be self-righting or capable of being readily righted by its crew.

1. Marked with instructions that it must be worn in conjunction with warm clothing.
2. So constructed that, when worn in conjunction with warm clothing, and with a lifejacket if the immersion suit is to be worn with a lifejacket, the immersion suit continues to provide sufficient thermal protection, following one jump by the wearer into the water from a height of 4.5 m, to ensure that when it is worn for a period of 1 h in calm circulating water at a temperature of 5°c, the wearer's body core temperature does not fall more than 2°c

- An immersion suit made of material with inherent insulation, when worn either on its own or with a lifejacket, if the immersion suit is to be worn in conjunction with a lifejacket, shall provide the wearer with sufficient thermal insulation, following one jump into the water from a height of 4.5 m, to ensure that the wearer's body core temperature does not fall more than 2°c after a period of 6 h immersion in calm circulating water at a temperature of between 0°c and 2°c.
- Buoyancy requirements A person in fresh water wearing either an immersion suit or an immersion suit with a lifejacket, shall be able to turn from a face-down to a face-up position in not more than 5 s.

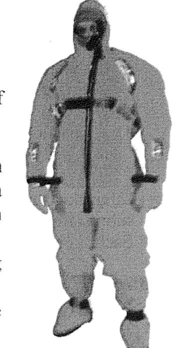
Thermal protective aids

- A thermal protective aid shall be made of waterproof material having a thermal conductance of not more than 7800 W/ (m^2/K) and shall be so constructed that, when used.
- A thermal protective aid shall cover the whole body of persons of all sizes wearing a lifejacket with the exception of the face. Hands shall also be covered unless permanently attached gloves are provided.
- A thermal protective aid shall be capable of being unpacked and easily donned without assistance in a survival craft or rescue boat.
- A thermal protective aid shall permit the wearer to remove it in the water in not more than 2 min, if it impairs ability to swim.
- The thermal protective aid shall function properly throughout an air temperature range -30°c to +20°c.



- Be provided with a manually operated switch.
- Flash at a rate of not less than 50 flashes and not more than 70 flashes per minute with an effective luminous intensity of at least 0.75 cd.

Immersion suits



- The immersion suit shall be constructed with waterproof materials such that:

  1. It can be unpacked and donned without assistance within 2 min, taking into account any associated clothing, and a lifejacket if the immersion suit is to be worn in conjunction with a lifejacket.
  2. It will not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 s.
  3. Be covered unless permanently attached gloves are provided.
  4. It is provided with arrangements to minimize or reduce free air in the legs of the suit.
  5. Following a jump from a height of not less than 4.5 m into the water there is no undue ingress of water into the suit.

- An immersion suit which may also complies with the requirements of a lifejacket.
- An immersion suit shall permit the person wearing it, and also wearing a lifejacket if the immersion suit is to be worn in conjunction with a lifejacket, to:

  1. Climb up and down a vertical ladder at least 5 m in length.
  2. Perform normal duties associated with abandonment.
  3. Jump from a height of not less than 4.5 m into the water without damaging or dislodging the immersion suit, or being injured.
  4. Swim a short distance through the water and board a survival craft.

- If the immersion suit is to be worn in conjunction with a lifejacket, the lifejacket shall be worn over the immersion suit. A person wearing such an immersion suit shall be able to don a lifejacket without assistance.

Thermal performance requirements for immersion suits

- An immersion suit made of material which has no inherent insulation shall be:

- An adult lifejacket shall allow the person wearing it to swim a short distance and to board a survival craft.
- A child lifejacket shall be constructed and perform the same as an adult lifejacket except as follows:

    1. Donning assistance is permitted for small children.
    2. It shall only be required to lift the mouth of an exhausted or unconscious wearer clear- of the water a distance appropriate to the size of the intended wearer.
    3. Assistance may be given to board a survival craft, but wearer mobility shall not be significantly reduced.

- Lifejacket shall have buoyancy which is not reduced by more than 5% after 24 h submersion in fresh water.
- Each lifejacket shall be fitted with a whistle firmly secured by a cord.

Inflatable lifejackets

A lifejacket which depends on inflation for buoyancy shall have not less than two separate compartments and shall inflate automatically on immersion, be provided with a device to permit inflation by a single manual motion and be capable of being inflated by mouth.

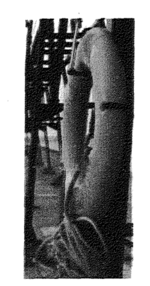


Lifejacket lights

Each lifejacket light shall:

- Have a luminous intensity of not less than 0.75 cd in all directions of the upper hemisphere.
- Have a source of energy capable of providing a luminous intensity of 0.75 cd for a period of at least 8 h.
- Be visible over as great a segment of the upper hemisphere as is practicable when attached to a lifejacket
- Be of white colour.

If the light is a flashing fight, it shall, in addition:



Buoyant lifelines

Buoyant lifelines:

- Be non-kinking.
- Have a diameter of not less than 8 mm.
- Have a breaking strength of not less than 5 KN.

Lifejackets



- A lifejacket shall not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 s.
- An adult lifejacket shall be so constructed that:

  1. At least 75% of persons, who are completely unfamiliar with the lifejacket, can correctly don it within a period of 1 min without assistance, guidance or prior demonstration.
  2. After demonstration, all persons can correctly don it within a period of 1 min without assistance.
  3. It is clearly capable of being worn in only one way or, as far as is practicable, cannot be donned incorrectly.
  4. It is comfortable to wear.
  5. It allows the wearer to jump from a height of at least 4.5 m into the water without injury and without dislodging or damaging the lifejacket.

- An adult lifejacket shall have sufficient buoyancy and stability in calm fresh water to:

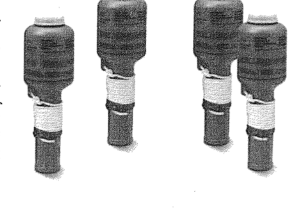
  1. Lift the mouth of an exhausted or unconscious person not less than 120 mm clear of the water with the body inclined backwards at an angle of not less than 20° from the vertical position.
  2. Turn the body of an unconscious person in the water from any position to one where the mouth is clear of the water in not more than 5 s.

whichever is the greater, without impairing either its operating capability or that of its attached components.

- If it is intended to operate the quick-release arrangement provided for the self-activated smoke signals and self-igniting lights have a mass sufficient to operate the quick-release arrangement.
- Be fitted with a grabline not less than 9.5 mm in diameter and not less than four times the outside diameter of the body of the buoy in length. The grabline shall be secured at four equidistant points around the circumference of the buoy to form four equal loops.

Lifebuoy self-igniting lights

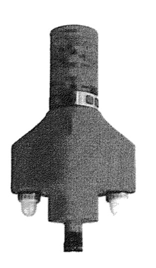
Self-igniting lights shall:



- Be such that they cannot be extinguished by water
- Be of white colour and capable of either burning continuously with a luminous intensity of not less than 2 cd in all directions of the upper hemisphere or flashing (discharge flashing) at a rate of not less than 50 flashes and not more than 70 flashes per minute with at least the corresponding effective luminous intensity
- Be provided with a source of energy for a period of at least 2 h
- Be capable of withstanding the drop test required by paragraph

Lifebuoy self-activating smoke signals

Self-activating smoke signals required shall:



- Emit smoke of a highly visible colour at a uniform rate for a period of at least 15 min when floating in calm water
- Not ignite explosively or emit any flame during the entire smoke emission time of the signal
- Not be swamped in a seaway
- Continue to emit smoke when fully submerged in water for a period of at least 10 s
- Be capable of withstanding the drop test required

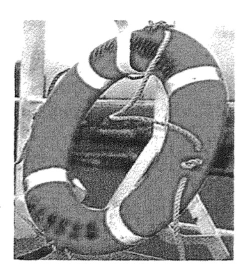
Personal life-saving appliances

General requirements for life-saving appliances

- Be constructed with proper workmanship and materials
- Not be damaged in stowage throughout the air temperature range -30°C to +65°C
- If they are likely to be immersed in seawater during their, use, operate throughout the seawater temperature range -1°C to +30°C;
- Where applicable, be rot-proof, corrosion-resistant, and not be unduly affected by seawater, oil or fungal attack
- Where exposed to sunlight, be resistant to deterioration
- Be of a highly visible colour on all parts where this will assist detection
- be fitted with retro-reflective material where it will assist in detection
- if they are to be used in a seaway, be capable of satisfactory operation in that environment
- be clearly marked with approval information, including the Administration which approved it and any operational restrictions
- Where applicable, be provided with electrical short-circuit protection to prevent damage or injury.

Life Buoy

Every lifebuoy shall:



- Have an outer diameter of not more than 800 mm.
- Be constructed of inherently buoyant material; it shall not depend upon rushes, cork shavings or granulated cork, any other loose granulated material or any air compartment which depends on inflation for buoyancy.
- Be capable of supporting not less than 14.5 kg of iron in fresh water for a period of 24 h.
- Have a mass of not less than 2.5 kg
- Not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 s.
- Be constructed to withstand a drop into the water from the height at which it is stowed above the waterline in the lightest seagoing condition or 30 m,

WHAT YOU NEED TO BE PREPARED:

- You attend training in the theory of hypothermia/drowning, First aid and CPR and update this regularly to include the latest operation procedures!
- You know the procedures and the equipment on board for rescuing a person from the water!

- If circumstances allow, the rescued person should always be transferred in a horizontal body position including when being lifted from the water.
- A person with hypothermia should lie down and be kept still (immobile).
- Cover the person thoroughly with blankets or plastic sheets/bags against risk of further cooling down, including head, neck and as much face as possible!
- Remove wet clothing once the person is in a warm room (20-25oC). Use scissors to ensure minimum movement of the body!
- Prevent the person from standing up, unless the rectal temperature is more than 36oC.
- Give warm sweet drinks, no alcohol, and no caffeine.
- Keep continuous watch over the victim.
- Ask for telemedical consultation.
- Give oxygen, if available.

PERSON IS UNCONSCIOUS:

- Put into the recovery position. Observe breathing and pulse!
- Observe for vomiting and be prepared to clear airway.
- Be prepared for a sudden cardiac and breathing arrest.
- Give Cardiopulmonary Resuscitation (CPR) only if you do not feel any pulse or breathing for more than two minutes. Remember that in hypothermia blood pressure is very low. Pulse and breathing are very slow. Any mechanical irritation of the body in that stage can cause cardiac arrest.

PERSON IS NOT BREATHING AND HAS NO PULSE FOR MORE THAN TWO MINUTES:

- If you are not sure that the person has been in cardiac arrest for more than one hour and if there are no signs of irreversible death (injuries, decomposition), a successful resuscitation could be possible.
- Bring oxygen to the brain! Immediately start with rhythmic cardiac compression. If available use a chest suction device for more efficiency.
- Blow air into the lungs. Use an artificial airway device, if available (e.g. combitube), otherwise ventilation bag/mask or mouth-to-mouth.
- Follow the guidelines you have learned in your CPR training. Do not stop until you get medical advice to do so.

SHIP ABANDONMENT:

- Avoid entering the water for as long as possible!
- Automatic life vests should be manually activated before you enter the water and after you leave the interior of your ship.
- Enter the water as late as possible and as slowly (step by step) as possible to prevent cold shock!
- Do not jump into the water (danger of cold shock)!
- If falling into the water, keep your elbows to your sides and cover your nose and mouth with one hand, holding the wrist or elbow firmly with the other hand!
- Be prepared that the first contact with the cold water will stress your circulation, breathing and nervous system.
- Within a few minutes of minimum movement the pain of your skin will become more tolerable.

IN THE WATER:

- Float on your back with a minimum of leg movement!
- Stay calm. Float as still as possible, legs together, elbows close to your side, and arms folded across the front of your lifejacket.
- Keep as much skin as possible out of the water!
- Huddling close to others will conserve body heat.
- Keep a positive attitude of mind. You will be the lucky one to be rescued! You can survive a long time in cold water, even in deep hypothermia, even when unconscious. Rescuers are searching for you! This positive attitude helps your body to keep its core temperature.
- Do not drink or inhale seawater!

CHECKLIST FOR RESCUERS

FIRST AID AFTER COLD WATER IMMERSION:

- Do search long enough! Survival is possible, even after many hours in cold water.
- Ask MRCC for advice; whether to give up or not.
- Do not expect any kind of assistance from a person in need of rescue! A full and coordinated use of fingers and arms will be not possible. Lifting an arm for taking hold of a rope can induce the sinking and drowning of the victim.

- If immersion in water is necessary, **try to enter the water gradually.**

- Swimming increases body heat loss. **Swim only to a safe refuge nearby.**

- To reduce your body heat loss, **try to float in the water with your legs together, elbows to your side, and arms across your chest.**

- In a survival situation, you must **force yourself to have the will to survive.** This will make the difference between life and death.

- In conclusion, advance planning, preparation and thought on your part can be the most significant factors in your struggle with cold water immersion and in your survival. Familiarize yourself with the contents of this guide

CHECKLIST FOR COLD WATER SURVIVAL

WHAT CAN I DO FOR SURVIVING A LONGER STAY IN COLD WATER, EVEN FOR SEVERAL HOURS?

PREPARATION IN ADVANCE:

- Hardy to cold.
- Fitness.
- Emergency rescue training.
- Knowledge of cold water survival.
- Have a plan!

IN A DISTRESS ALERT SITUATION:

- Put on as many layers as possible, alternating thin/close-meshed and thick/wide-meshed! The outer layer should be as watertight as possible. Fasten, close and/or button-up clothing to prevent cold water flushing through the clothing.
- Cover head, neck and face.
- Wear robust, laced boots (better than Wellingtons)!
- Put an immersion suit over the warm clothing!
- Drink a lot (warm tea is best, no alcohol: that reduces chances of survival in cold water!)
- Take anti-seasickness tablets as soon as possible.
- Be sure that all your clothing, life jacket and lifebelt are secured correctly! In cold water you will lose full use of your fingers immediately. Check each other!

6. Advice on re-warming and decisions regarding further treatment should normally be given only by a doctor. If no medical advice is immediately available, continue to apply the essential life-saving procedures given in subparagraphs .1 to .5 above. In addition, even if the rescued person is cold and appears dead, or if he deteriorates and/or the pulse and breathing are lost, resuscitation attempts should not be ended before patient has been re-warmed. In a sheltered warm room the person's clothing can be cut and removed with a minimum of disturbance. Then wrap the person in blankets to reduce further heat loss. The best method of active re-warming is the use of forced warm air (maximum 40°C), which has to be blown under the blankets covering the rescued person. Alternatively use heated blankets or sheets (about 40°C, but not hotter). Never use a hot bath or hot shower!
7. Passive methods of warming are not very effective. Do not attempt to warm the person by vigorous actions. Apply heating pads or hot water bottles under the blanket, to the person's head, neck, chest and groin but never place these warm objects against the bare skin as cold skin is easily burned.

- If the above-mentioned methods of warming are not available then apply body warmth by direct body-to-body contact with the rescued person. In addition, wrap a blanket around both the rescued person and the person or persons supplying the warmth. In all cases try to monitor the pulse and breathing.

Summing up

- **Plan your emergency moves in advance!** Ask yourself what you would do if an emergency arose. Where is your nearest exit to the deck for escape? Where is the nearest available immersion suit, lifejacket, lifeboat, or raft? How would you quickly get to your foul weather gear, insulated clothing, and insulated gloves?

- **Know how your survival equipment works.** The time of the emergency is not the time to learn.

- Even in the tropics, before abandoning ship, **wear many layers of clothing** to offset the effects of cold. Wear an immersion suit if available.

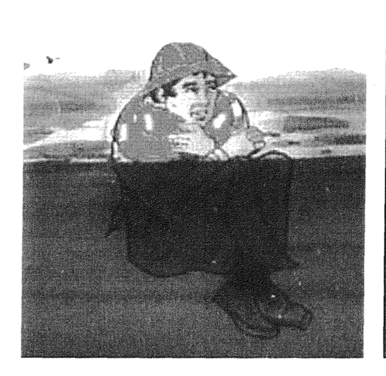
- **Put on a lifejacket** as soon as possible in an emergency situation.

- When abandoning ship, **try to board the lifeboat or raft dry** without entering the water. Take anti-seasickness medicine as soon as possible.

Treatment of the immersion survivor

- The treatment for hypothermia will of course depend on both the condition of the survivor and the facilities available. Generally speaking, survivors who are rational and capable of recounting their experiences, although shivering dramatically merely require removal of all wet clothes and replacement with dry clothes or blankets. If possible, they should be taken from the water horizontally and carried this way, or else be returned to the horizontal (or, better still, to the unconscious position) as quickly as possible and kept this way. Hot sweet drinks should be given but only if the victim is fully conscious with gag and cough reflexes. Rest in a warm environment not exceeding 25°C (normal room temperature) is also recommended. Do not allow alcohol or smoking, or massaging or rubbing of the cold skin. However, always bear in mind that even conscious survivors can collapse and become unconscious shortly after rescue. They should therefore be kept resting horizontally, with their legs slightly elevated (the .shock position.), and be watched until core rectal temperature has exceeded 35°C.
- In more serious cases, where the survivor is not shivering and is semi-conscious, unconscious, or apparently dead, immediate first-aid measures will be necessary to preserve life while awaiting medical advice on more detailed management procedures. This advice should be_sought as soon as possible and first-aid measures should not be delayed while advice is being sought. The recommended first-aid measures for such an immersion survivor are as follows:
  1. On rescue, always check the survivor's breathing and carotid pulse for one minute each side of the neck.
  2. If the survivor is not breathing, make sure the airway is clear (remove dentures, if any), tilt the head back, lift the chin and start artificial respiration immediately (mouth-to-mouth or mouth-to-nose). If the heart appears to have stopped beating then cardiac compressions may be applied. However, you should be certain that there is no pulse at all (remember that hypothermia slows and weakens the pulse greatly) and, once started, it must be continued properly until the patient is either fully re-warmed or delivered to a hospital.
  3. If the survivor is breathing but unconscious, lay him in the unconscious position. This is necessary to ensure that the person's breathing is not obstructed by his tongue or by vomit.
  4. Avoid all manhandling which is not necessary to determine whether there are any serious injuries; do not even remove wet clothes; do not massage.
  5. Prevent further heat loss through evaporation and from exposure to the wind. Carefully wrap the patient in blankets and/or a casualty bag or large plastic bag and transfer immediately to a (wind-) sheltered area or below decks to a compartment at normal room temperature, keeping him horizontal, slightly head down.

addition, unnecessary movements of your arms and legs send warm blood from the inner core to the extremities (arms and legs) and thus to the outer parts of the body. This can result in very rapid heat loss. Stay calm and take up a good position to prevent drowning.





'. The body position you assume in the water is also very important in conserving heat. Try to float as still as possible with your legs together, elbows close to your side, and arms folded across the front of your lifejacket. This position minimizes the exposure of the body surface to the cold water. Try to keep your head and neck out of the water.

0. Try to board a lifeboat, raft, or other floating platform or object as soon as possible in order to shorten the immersion time. Remember: you lose body heat many times faster in water than in air. Since the effectiveness of your insulation has been seriously reduced by water soaking, you must now try to shield yourself from wind to avoid a wind-chill effect. If you manage to climb aboard a lifeboat, shielding can be accomplished with the aid of a canvas cover, a tarpaulin, or an unused garment. Huddling close to the other occupants of the lifeboat or raft will also conserve body heat.

1. Keep a positive attitude of mind about your survival and rescue. This will improve your chances of extending your survival time until rescue comes.

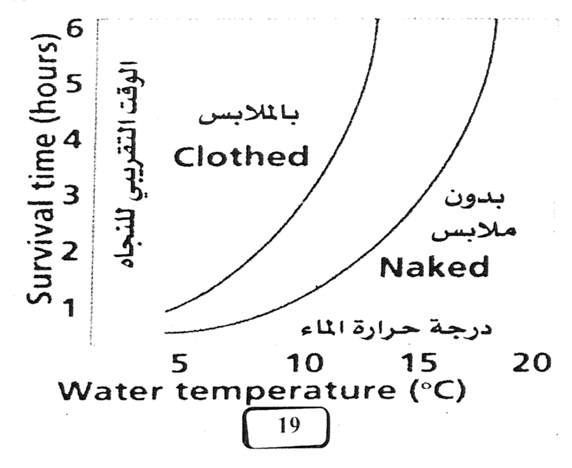
Ship abandonment

- Ships may sink in less than 15 minutes. This affords little time to formulate a plan of action, so careful planning is essential to be ready in an emergency. Here are some sound pointers for you to remember when abandoning a ship:

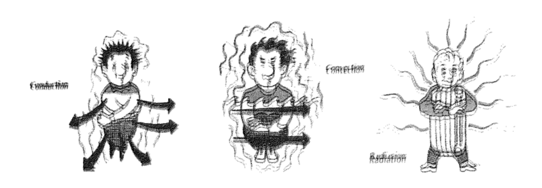
1. Put on as many layers of warm clothing as possible, including foot protection, making sure to cover head, face, neck, hands and feet. Fasten, close and/or button up clothing to prevent cold water flushing through the clothing.
2. If an immersion suit is available, put it on over the warm clothing.
3. If the immersion suit does not have inherent flotation, put on a lifejacket and be sure to secure it correctly before immersion. In cold water you will lose full use of your fingers immediately.
4. If time permits all persons should, before boarding the survival craft or in any case immediately after boarding, take some recommended anti-seasickness medicine. Seasickness will interfere with your survival chances as vomiting removes precious body fluid, and seasickness in general makes you more prone to hypothermia and impairs your will to survive.
5. Avoid entering the water if possible, e.g. board davit-launched survival craft on the embarkation deck or by the marine escape system. If davit-launched survival craft, a marine escape system or other means of dry-shod embarkation are not available, use over-side ladders or, if necessary, lower yourself by means of a rope or fire hose.
6. Stay out of the water as long as possible! Try to minimize the shock of sudden cold immersion. A sudden plunge into cold water can cause rapid death, or an uncontrollable rise in breathing rate may result in an intake of water into the lungs. If jumping into the water is unavoidable, you should try to keep your elbows to your side and cover your nose and mouth with one hand while holding the wrist or elbow firmly with the other hand. Avoid jumping onto the liferaft canopy or jumping into the water astern of a liferaft, in case the ship has some remaining headway.
7. Once in the water, whether accidentally or by ship abandonment, orient yourself and try to locate the ship, lifeboats, liferafts, other survivors, or other floating objects. If you were unable to prepare yourself before entering the water, button up clothing now. In cold water, you may experience violent shivering and great pain. These are natural body reflexes that are not dangerous. You do, however, need to take action as quickly as possible before you lose full use of your hands: button up clothing, turn on signal lights, locate whistle, etc.
8. While afloat in the water, do not attempt to swim unless it is to reach a nearby craft, a fellow survivor, or a floating object on which you can lean or climb. Unnecessary swimming will pump out any warm water between your body and the layers of clothing, thereby increasing the rate of body heat loss. In

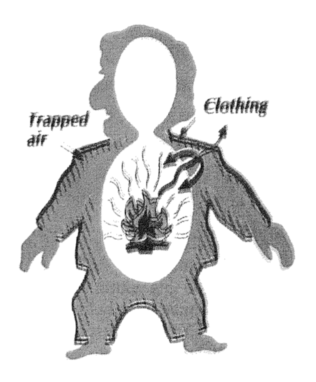
2. Wind speed.
3. Sea conditions.
4. Length of time spent in the water.
5. Protective clothing worn.
6. Body type of the survivor.
7. Mental and health status of the survivor.
8. Level of alcohol and certain drugs in the survivor's body.
9. Manner in which the survivor conducts himself.

- An abnormally low body core temperature can be recognized by a variety of symptoms. Very early during exposure, the body tries to combat the excessive heat loss both by narrowing its surface blood vessels (to reduce heat transfer by blood to surface) and by shivering (to produce more body heat). However, if the exposure is severe, the body is unable to conserve or produce enough heat. Body core temperature begins to fall. When the body core temperature is below 35°C, the person is suffering from hypothermia.
- By then, discomfort, tiredness, poor coordination, numbness, impaired speech, disorientation, and mental confusion are well established. As the internal temperature falls further, unconsciousness may occur, shivering is replaced by muscle stiffness, and the pupils of the eyes may be enlarged. The heartbeat becomes irregular, slow and weak and the pulse is barely detectable. Although death may occur at any stage of hypothermia, when a person's temperature is very low it is difficult to understand, if the person is alive or dead. Death by hypothermia is then defined as a failure to revive on re-warming



2. Transfer of heat by air or water currents: moving air is far cooler to the body than still air. Cooling by wind is known as the wind-chill effect. Similarly disturbed or moving water around your body is more chilling than still water at the same temperature.





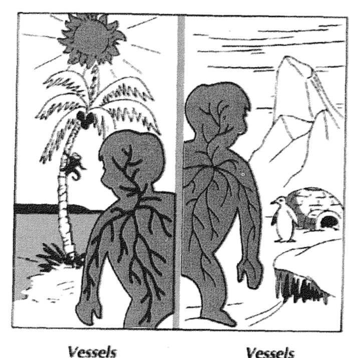
3. In almost all parts of the world, man cannot survive without the aid of clothes. Clothes by themselves do not warm the body; the body is actually warmed by its own heat production. The body heat warms the layer of air trapped between the skin and clothing. It is this layer of air that provides insulation. If the layer of air is lost, then the insulation is diminished. This layer of trapped air between skin and clothing may be disturbed by movement or displaced by water. In either case, valuable warm air is displaced and skin temperature will fall. Heat from the body core will them be used in an endeavor to maintain skin temperature. If heat loss from the skin remains unchecked, the body core temperature will fall.

Hypothermia

- The loss of body heat is one of the greatest hazards to the survival of a person at sea. The rate of body heat loss depends on the:

1. Water and air temperature.

- Nature requires that your body core be kept to an ideal temperature of 37°C. A network of blood vessels running through the core and the outer layer of your body picks up the heat produced, and distributes it throughout the body.
- Nature also gives your body a very accurate system to regulate automatically the core temperature at 37°C. For example, if the temperature around you is high, as on a warm day or in a hot boiler room, the blood vessels near the skin of your body will enlarge, allowing more blood to flow to the outer layer and increase body heat loss. This will keep you comfortable and keep the core temperature from rising. If the surroundings are cool, your body will narrow the blood vessels in the outer layer and keep that valuable body heat from being lost too rapidly.



Vessels enlarged   Vessels narrowed

- This regulatory system strives to keep the core temperature of the body constant despite variations in ambient temperature around you. The body can only do this within certain limits. There are levels of cold exposure when the body must have help in maintaining the core temperature at nature's choice of 37°C. You must give your body that help by taking correct actions and wearing protective clothing.

Body heat loss and insulation

- The body usually loses heat to the surroundings in the following ways:

1. Transfer of heat by direct contact with cold water or other materials. Heat passes from your body, which is at a relatively high temperature, to a substance which is lower in temperature. Certain substances are better conductors of heat than others. Water conducts heat more than twenty times faster than air.

Chapter (3)

Guide for Cold Water Survival

& Protective Equipments

Introduction

- The sinking of the Titanic in 1912 provided a dramatic example of the effects of cold water immersion. Partially due to a lack of preparedness with protective clothing, of adequate flotation equipment, and of knowledge of survival procedures, none of the 1,489 persons immersed in the 0°C water was obviously alive when rescue vessels arrived one hour and 50 minutes after the sinking.
- Countless lives could have been saved had the survivors and the rescuers known more of how to cope with cold water: almost all of the people in the lifeboats were alive.
- During the Second World War the Royal Navy of the United Kingdom alone lost about 45,000 men at sea, of who it is estimated 30,000 died from drowning and hypothermia. Many of those who drowned did so because of incapacitation due to cold. Even today the pattern is similar.
- It is important to realize that you are not helpless to affect your own survival in cold water. Body heat loss is a gradual process, and research shows that in calm water at 5°C a normally dressed person has a 50% chance of surviving three hours. Simple self-help techniques can extend this time, particularly if the person is wearing a lifejacket. You can make the difference.

Your body

- An understanding of how your body reacts to cold air or water exposure, and knowing the steps you can take to help your body delay the damaging effects of cold stress, will help you in your struggle to stay alive in the event of cold water exposure.
- Imagine your body to consist of an inner core and an outer layer. Your body produces a great deal of heat as a result of normal body functions, such as physical exercise and digesting your food.

Weekly inspections: All survival craft, rescue boat and launching appliances shall be visually inspected to ensure that they are ready for use. All engines from lifeboat and rescue boats shall be run ahead and astern for a total period of not less than 3 minutes. The general emergency alarm system shall be tested.

Monthly inspection: Inspection of lifesaving appliances including lifeboat equipment shall be carried out monthly using the checklist required by regulation to ensure that they are complete and in good order. A report of the inspection shall be entered in the logbook.

Service of inflatable life rafts, inflatable lifejackets and inflatable rescue boats: Every inflatable liferaft and lifejacket shall be serviced at an interval not exceeding 12 months. However, the administration may extend this period to 17 months at an approved servicing station which is competent to service them, maintains proper servicing facilities and uses only properly trained personnel.

All repair and maintenance of inflated rescue boats shall be carried out in accordance with the manufacturer's instructions. Emergency repairs may be carried out on board the ship; however, permanent repairs shall be affected at an approved servicing station.

Periodic servicing of hydrostatic release units: Shall be serviced at an intervals not exceeding 12 months, the administration may extend this period to 17 months.

equipment shall be given as soon as possible but not later than two weeks after the crew members join the ship.

Each member of the crew shall be given instructions which shall include but not necessarily be limited to:

- Operation and use of the ship's inflatable liferafts.
- Problems of hypothermia, first aid treatment for hypothermia casualty and other appropriate first aid procedure.
- Special instructions necessary for use of the ship's lifesaving appliances in severe weather and severe sea conditions.
- On board training in the use of davit launched liferafts shall take place at intervals of not more than four months on every ship fitted with such appliances.

Operational Readiness, Maintenance and Inspections

Operational readiness: before the ship leaves port and at all times during the voyage, all lifesaving appliances shall be in working order and ready for immediate use.

Maintenance: Instructions for on-board maintenance of lifesaving appliances complying with the requirements of regulation 52 shall be provided and maintenance should be carried out accordingly:

- A checklist for use when carrying out the inspections required by regulation.
- Maintenance and repair instructions.
- Schedule of periodic maintenance.
- Diagram of lubrication points with the recommended lubricants.
- List of replaceable parts.
- List of sources of spare parts.
- Log for records of inspections and maintenance.

Maintenance of falls: Falls used in launching shall be turned end for end at intervals of not more than 30 months and be renewed when necessary due to deterioration of the falls or at intervals of not more than 5 years, whichever is the earlier.

Spares and repair equipment: Spares and repair equipment shall be provided for lifesaving appliances and their components which are subject to excessive wear or consumption and need to be replaced regularly.

Musters and Drills

To ensure that all onboard always know their duties in the event of an emergency, muster and drills shall be performed. It is during drills that things possibly not functioning quite according to the purpose shall be found and it's during drills you ask the questions you want to have answered.

Each member of the crew shall participate in at least one abandon ship drill and one fire drill every month. The drill of the crew shall take place within 24 hours of the ship leaving port, if more that 25% of the crew have not participated in abandon ship and fire drills on board that particular ship in the previous month.

On a ship engaged on an international voyage muster of the passengers shall take place within 24 hours after their embarkation. Passenger shall be instructed in the use of the lifejackets and the action to take in an emergency.

On a ship engaged on short international voyage, if a muster of the passengers is not held on the departure, the attention of the passengers shall be drawn to the emergency instructions required by regulation.

Each abandon ship muster shall include summoning of passengers, reporting to stations and preparing the duties describe in the muster list, checking the passengers are suitably dressed, checking that the lifejackets are properly donned, lowering of at least one lifeboat, starting and operating the lifeboat engine, operation of davits used for launching survival craft.

The launching of a lifeboat with its assigned operating crew aboard and maneuvered in the water will take place at least once every three months during abandon ship drills. As far as reasonable and practicable, rescue boats other than lifeboats which are also rescue boats shall launch each month with their assigned crew aboard and maneuvered in the water. In all cases this requirement shall be complied with at least every three months.

If lifeboat and rescue boat drills are carried out with the ship making headway, such drills shall, because of the danger involved be practiced in sheltered water only and under supervision of an officer experienced in such drills.

Emergency lighting for mustering and abandonment shall be tested at each abandon ship drill.

On board training and instructions

On board training and instructions in the use of life saving appliances including survival craft

Person over Board Muster Lists

If a person falls over board it is vital to get him aboard again as quickly as possible. The most frequent cause of death is not drowning alone. But the death caused by the sudden cold-water immersion.

To ensure the rapid recovery of persons who have fallen over board, some ships have special person over board muster list. This muster list consists of only a small number of crew members, who can quickly launch the rescue boat and save the person concerned. Some ships have rescue boat specifically for this purpose, on others, a motor lifeboat is used.
The person over board muster list should be placed near the rescue boat and on general muster lists.

MAN-OVER-BOARD MUSTER LIST

M/S ______________________ DATE ______________

ALARM SIGNAL	▬▬ ▬▬ ▬▬ *3 long blasts (letter "O") sounded at least 4 times on the ship's whistle followed by the same signal on the fire alarm bells*

ON THE BRIDGE

Position	*Duties*
Captain	*In charge all operations*
First Mate	*Takes over the seawatch*
Able Seaman/Ship's Assistant	*Helmsman*

PÅ BÅDDÆKKET
ON THE BOAT DECK

Overstyrmand *Chiefmate*	Leder udsætning og ombordtagning af båd *Conducts launching and recovery of the boat*
Matros/Skibsassistent *Able Seaman/Ship's Assistant*	Klargør båd til udsætning – Affirer efter ordre – Klargør til ombordtagning *Prepares boat for launching – Lower when ordered – Prepares recovery*

BOAT CREW – wearing lifejackets/protective suit

Second Mate	*Boat commander – Takes walkie-talkie – Releases hooks and painter*
First Engineer	*Prepares engine – Rescues survivors – Aft hook when hugging to*
Able Seaman/Ship's Assistant	*Look-out – Rescues survivors – Forward hook when hugging to*

IN THE ENGINE ROOM

Chief engineer	*Takes over engine watch*

This example shows a MOB muster list for a cargo vessel with a combined lifeboat/rescue boat fulfilling the requirements of the new chapter III in SOLAS (Ships built after July 1st 1986)

BENNEVIS STATION BILL

ABANDON RIG STATIONS

PORT LIFEBOAT NO.2	STARBOARD LIFEBOAT NO.1
SAFETY ENGINEER IN CHARGE	OFFSHORE INSTALLATION MANAGER IN CHARGE
NIGHT PUSHER	JACK FOREMAN
MECHANIC	CHIEF ENGINEER
MOTORMAN ON DUTY	MOTORMAN OFF DUTY
OILER ON DUTY	OILER OFF DUTY
CRANE OPERATOR DAY	CRANE OPERATOR NIGHT
RADIO OPERATOR DAY	RADIO OPERATOR NIGHT
AST. ELECTRICIAN	ELECTRICIAN
MATERIALS MAN	CAMP BOSS
SUPERINTENDENT	BARGE MASTER
AST. JACK FOREMAN	DRILLER ON DUTY
WELDER	DRILLER OFF DUTY
TOUR PUSHER	AST. DRILLER ON DUTY
DOCTOR	AST. DRILLER OFF DUTY
AST. WELDER	DERRICKMAN ON DUTY
AST.CRANE OP. (2)	DERRICKMAN OFF DUTY
PAINTERS (6)	AST. DRK ON DUTY
COMPANY REP.	AST. DRK OFF DUTY
DRLG ENGINEER	FLOORMEN (6)
GEOLOGIST	ROUSTABOUT (6)
MUD ENGINEER	CHIEF COOK
GUPCO SERVICES	CATERING CREW (11)
VISITORS	

BEFORE PROCEEDING TO LIFEBOAT STATIONS
WEAR PROPER CLOTHING AND LIFE JACKETS

FIRE TEAMS AND EMERGENCY STATIONS

BRIDGE	O.I.M	IN CHARGE
	DOCTOR	WITH SUPPORT TEAM
RADIO ROOM	COMPANY REP.	TO LIAISE WITH OIM AND GUPCO SHORE BASE
	RADIO OPERATOR	DAY
	RADIO OPERATOR	NIGHT
FIRE TEAM "A" MAIN DECK	SAFETY ENGINEER	IN CHARGE
	CRANE OPERATOR ON DUTY	TEAM LEADER
	AST. CR. OP. ON DUTY	ASSISTING
	ROUSTABOUTS ON DUTY	ASSISTING
	MUSTER AT SACKS STORE & PROCEED TO FIGHT THE FIRE. REPORTING TO OIM ON THE BRIDGE USING VHF RADIO.	
FIRE TEAM "B" MAIN DECK	SAFETY ENGINEER	IN CHARGE
	JACK FOREMAN	TEAM LEADER
	AST. JACK FOREMAN	ASSISTING
	CRANE OP. OFF DUTY	ASSISTING
	AST. CR. OP. OFF DUTY	ASSISTING
	ROUSTABOUTS OFF DUTY	ASSISTING
	WELDER	ASSISTING
	MUSTER AT SACKS STORE REPORT TO OIM ON THE BRIDGE BY PHONE	
	START UPWIND FWD CRANE	
DRILL FLOOR	NIGHT PUSHER	TEAM LEADER
	TOUR PUSHER	ASSISTING
	DRILLER	ASSISTING
	AST. DRILLER	ASSISTING
	DERRICKMAN	ASSISTING
	AST. DERRICKMAN	ASSISTING
	FLOORMEN	ASSISTING
	SECURE THE WELL REPORT TO OIM ON THE BRIDGE BY PHONE	
ENGINE ROOM	CHIEF ENGINEER	TEAM LEADER
	MECHANIC	ASSISTING
	ELECTRICIANS	ASSISTING
	MOTORMAN ON DUTY	ASSISTING
	OILER ON DUTY	ASSISTING
	ENSURE FIRE PUMPS AVAILABLE REPORT TO OIM ON THE BRIDGE BY PHONE	
CATERING	CAMP BOSS	TEAM LEADER
	CHIEF COOK	ASSISTING
	CATERING STAFF	ASSISTING
	CLEAR ACCOMMODATION THEN CONFIRM TO OIM ON THE BRIDGE. MUSTER AT THE STARBOARD LIFEBOAT	

ALARM SIGNALS

1) CONTINUOUS	ABANDON RIG
2) INTERMITTENT	FIRE & EMERG. (BLOW OUT)
3) THREE RINGS	MAN OVERBOARD
4) SIREN & YELLOW FLASHING LIGHT	H2S

TER ANY ALARM SIGNAL AN ANNOUNCEMENT WILL BE MADE IER THE BROADCAST SYSTEM IN BOTH ARABIC AND ENGLISH VING DETAILS AND INSTRUCTIONS.

THE EVENT OF AN H2S ALARM PROCEED TO THE LIDECK WITH YOUR ESCAPE PACK AND LIFE JACKET.

ALL SERVICE PERSONNEL AND VISITORS WILL MUSTER AT PORT LIFEBOAT STATION WHEN A FIRE ALARM IS SIGNALED WEARING LIFE JACKETS.

ALL OTHIER-ON/OFF DUTY RIG CREW WILL MUSTER AT THEIR LIFEBOAT STATIONS WEARING LIFE JACKETS.

CAMPBOSS WILL CHECK MUSTER LIST AT STARBOARD LIFEBOAT AND REPORT TO OIM ON THE BRIDGE.

MATERIALS MAN WILL CHECK MUSTER LIST AT PORT LIFEBOAT AND REPORT TO OIM ON THE BRIDGE.

Emergency Signals

A lot of emergencies could possibly happen on the vessel where you are to work. While there might not have any standard signals for these, as it may vary from one ship to another, some of the following are examples of such signals.

- Fire and emergency - rapid ringing of ship's bell and continuous sounding of the general alarm for a period of at least ten (10) seconds.
- General Emergency Alarm Signal (Boat stations) - seven (7) short blasts and one (1) long blast on the whistle and the same signal on the general alarm or through public address.
- Person-over-board - three (3) long blasts on the ship's whistle, repeat as necessary; hail and pass the word to the bridge.
- Dismissal- (from fire and emergency drills), three (3) short blasts on the whistle and three (3) short rings on the general alarm bells.

Lifeboat emergency and fire muster lists

In accordance with SOLAS notices called muster lists, which tell crew members what to do in an emergency, are to be placed on all ships. Among these notices are "Lifeboat, Fire and General Emergency Muster Lists". They can differ from ship to ship depending on the company. The lifeboat, fire and general muster lists will also vary according to the type of ship and the size of its crew. In some ships, the muster lists may be called "Station Bill".

Chapter (2)

The Muster List

The Muster list is a plan of action for an emergency situation should it arise. They are notices required by the SOLAS convention to be placed on board all ships. They also contain information as to when alarm signals are used and how they sound. Its main purpose is to give instruction to each crew member on what to do in case of emergency. It is, therefore, the duty of every member of the crew to acquaint himself thoroughly with the muster list immediately after boarding the vessel.

The following are to be considered by a seafarer:

- What is my task?
- Do I understand what to do?
- What and where is the equipment to be used?
- Who gives the order?
- To whom shall I report?
- What are the alarm signals of the ship?
- Your place on the muster list is either given by your rank, position, name, ship's number and room number

Emergency Instructions

Ships are operational for 24 hours a day and the crew must be organized in a regulated watch system while the ship is in operational service. It is, therefore essential that the crew be trained to cope with emergencies that may occur on board ship.

The illustrations and instructions in appropriate languages are posted on the strategic location throughout the ship which includes:

- Essential actions upon hearing the alarm signals.
- Correct donning of a life jacket.
- Emergency exits and escape routes.
- The launching of survival craft and rescue boat.
- Proper use of essential equipment.
- Instruction inside survival craft.

- We are exhausted or tired
- We don't know better
- We try to save time or effort and thereby cutting corners
- We don't have the resources to safely perform our duties

- Our equipment failed due to the fact that there was no preventive maintenance
- The crew onboard has very poor communication with each other
- We are overconfident
- We are not using the protective devices or protective equipment needed for the job
  As you see, there are many factors leading to accidents due to human error.

The ISM Code

The International Safety Management Code (ISM) was developed by the International Maritime Organization to improve maritime standards. Chapter 9 of the SOLAS 74 convention requires compliance with the code. The deadline for tankers, Bulk carriers >500 grt and passenger ships trading internationally was set on July 1998. For all others, it is set on July 2002.

The ISM Code has been designed to make the seafaring safer for people who work in the shipping industry and to prevent pollution. All shipping companies have to be approved by either the flag state (if they are using their own resources) or by a recognized organization like Lloyds or DNV (appointed to undertake this task on their behalf).

A Document of Compliance will be issued to the shipping company if they pass the inspection. This is proof that the company has a system that follows the guidelines on how to operate a shipping company safely. After this, the ship will then be audited. The inspection on board will confirm that you are doing what you say you do in the manuals. The audit will sample the procedures and look for evidence that the vessel is using the system. If it is found satisfactory, the ship will be issued a Safety Management Certificate.

Once they have implemented the system, the real work starts and that is to follow the procedures which were laid down in writing. If it is found that a procedure is not working, we have to make a written report to the management suggesting a change in the procedure. This includes regular maintenance of equipment on board. To make this work, a designated person in the office will coordinate between the ship and the company ashore. Now, it is up to them to use the system and try to make the best of it.

The ISM Code in a very simple way:

- Plan what you do.
- Do what you plan.
- Record it.

Now, that's very easy to remember.

Why is this necessary

Studies have shown that more than 85% of all accidents and incidents onboard ships area direct effect of human error. Then we can ask ourselves why do we make so many mistakes? It might be that:

delay the ship's departure from port if many of the crewmembers hold certificates from countries not on the list, This might in turn make ship owners reluctant to hire crew from non- white list countries.

Port State Control

The port state control was first adopted in 1981 in order to ensure that ships regardless of flag are operated in a manner that may not endanger persons, property or the environment, in other words to serve as the police force of the IMO. A port state control inspection takes place based on the following:

1. Initiative of port state authority (every ship should if possible be inspected at intervals not exceeding 6 months and, each port should try to inspect at least every fourth vessel arriving at their port).
2. Upon request from other organizations such as pilots, port captains, or a classification society.
3. Upon request from a crewmember or labour organization.

The task of the port state control is to examine that the vessels have:

- Valid and relevant certificates and other documentation onboard.
- The correct equipment onboard and the condition of such.
- Sufficient crew onboard as specified in safe manning certificate.
- Crew that are well trained and know how to act in an emergency, such as fire, cargo spill, medical emergency, grounding, steering failure, power failure or abandon ship.
- Crew that can communicate with each other and others effectively.
- Crew that can operate the vessel safely.

During an inspection, the Port State Control Officer (PSCO) will check the certificates and other documentation and get a general picture of the condition of the vessel and its crew. If this is found to be satisfactory the inspection will stop here. If, however the PSCO thinks that the general impression and the visual inspection of the vessel is poor and believes that the vessel does not substantially meet the requirements, a more detailed inspection will take place.

Since the guidelines, "procedures for port state control" came out in 1996 the port state control has more authority and today focuses more on the human element. This is one of the reasons why people today will notice more when they have an inspection, than they used to do a couple of years ago.

latest are the 1995 amendments, which were adopted by resolution 1 of the conference of contracting governments to the International Conventions for the Safety of Life at Sea, 1974 and entered into force in 1997. In order to provide an easy reference to all SOLAS requirements applicable from January 2007, there is a consolidated text of the Convention, its protocol of 1988 and all amendments in effect from that date. Currently there are 158 member states of IMO participating in conferences to improve SOLAS.

STCW 78/95

STCW 78 is an international convention adopted by the International Maritime Organization (IMO). It stands for Standards of Training, Certification and Watchkeeping for Seafarers. It was approved in 1978 and entered into force in April 1984.

The Convention defines the minimum accepted qualifications a seafarer should posses before he/she is allowed to board a merchant vessel as a crew member. It sets responsibilities of parties to ensure that their respective seafarers are appropriate qualified to hold a position onboard ship. The convention aim is to ensure safety of life and property at sea and the protection of the marine environment.

STCW 78 was amended (revised) in 1995 and since then, the STCW convention is referred to as STCW 78/95. The reason for the "new" convention was that the 1978 convention was not achieving its purpose. Instead, the convention was losing credibility. This was due to the lack of precision and it left too much for each administration to interpret the convention to their satisfaction. Many countries could not effectively administer and enforce the convention.

This in turn lead to that the STCW certificates could no longer be relied upon as evidence of competence, the revised convention puts more emphasis on each member state, to ensure that their educational system is being assessed and continuously monitored. This is to ensure that their educational system is working properly and that no one is issued a certificate without deserving it. The minimum standards should be the same all over the world.

By February 2002, each member state has to comply fully with the STCW 95 convention. Those countries that are considered to be on the right "track" are included on the so-called "*white list*".

This means that if a country is listed, the certificates issued by them are considered to be of an acceptable standard. If a country is not listed, it would mean that a seaman holding a certificate from this country will be subject to doubts in a port state inspection and the inspection will be very extensive and time consuming. In the long run, that might

it has been ratified (approved) by a specified number of countries or, in some cases, a specified % of the total shipping tonnage. When a Convention enters into force its requirements become mandatory in countries which are members of the IMO. This means that the countries will make their national laws conform to the convention. In practice, it is almost impossible to operate a ship internationally that does not meet the IMO standards.

The IMO has also adopted more than 800 Codes and recommendations dealing with a wide range of subjects. Some examples of these Include:

- International Maritime Dangerous Goods Code (IMDG-Code)
- Medical First Aid Guide for Use with Dangerous Goods (MFAG)
- International Code of Signals
- IBC-Code for-°Cl1emical tankers
- IGC-Code for Gas Tankers
- STCW 78/95-Code
- ISM-Code

The code and recommendations are designed to complement the requirements contained in the conventions or to assist in their implementation. Unlike conventions, these codes and recommendations are not always legally binding but are intended to act as a guide in framing national requirements. Many governments apply the codes by incorporating them, wholly or partly in their national legislation.

SOLAS (Safety of Life at Sea)

Following the tragic sinking of the Titanic in 1912, the International Conference on Safety of Life at Sea was convened in London in 1914. Representatives of 16 nations signed an agreement, which bound them to introduce a package of uniform regulatory practices to protect the lives of seafarers.

SOLAS is the most important convention. It is the oldest and the first version having been adopted at a conference in 1914. The second was adopted in 1929 and entered into force in 1933. The third was in 1948 and entered into force in 1952. The fourth was adopted (under the auspices of IMO) in 1960 and entered into force in 1965. The present version was adopted in 1974 and entered into force on 1980. And it has been amended twice by means of protocols and by means of resolutions adopted by IMO's Maritime Safety Committee (MSC).

There are a lot more amendments, which were adopted by resolutions and the



Chapter (1)

Introduction

Shipping is an international industry. It is therefore necessary that all seafarers share a common sense of purpose and apply rules and regulations in the same manner. Also, we have recognized that every individual is different and there will be various paths through education and training programs towards certification (W. O'Neil).

Various reports and studies show that most sea accident like collisions, groundings, fires, sinking or capsizing were commonly caused by human error. It could be miscalculation or wrong selection of sea routes, incorrect maneuvering of the vessel, miscalculation of fuel consumption, carelessness and non-compliance with maritime safety rules and regulations. While all of these could be attributed to the crewmembers' negligence, incompetence or inadequacy of knowledge, skills and attitude because of lack of proper training and education, these may also be attributed to interpersonal and human relationships on board ships.

The IMO

The International Maritime Organization (IMO) is a specialized agency of the United Nations responsible for technical matters that affect the shipping industry. It is the only UN Agency with a head office in London and it has about 167 member states. Its main task is to promote internationally accepted safety standards and to prevent pollution from ships. Pollution has become an important issue in recent years due to an increase in environmental awareness around the world.

The Motto of the IMO is "*Safe, Secure and Efficient Shipping on Clean Oceans*" In order to fulfill this, the IMO has adopted more than 30 Conventions affecting the maritime industry. Some examples of these include:

- Safety Of Life At Sea 1974 (SOLAS 74)
- Prevention of Pollution from Ships (MARPOL 73/78)
- Standards of Training Certification and Watchkeeping for Seafarers 1978 (STCW 78-95)
- International Regulations for Preventing Collisions at Sea. (COLREGS)
- International Convention on Load Lines

A Convention is an international treaty (pact) that establishes standards, which are acceptable to as many countries as possible. A convention enters into force when

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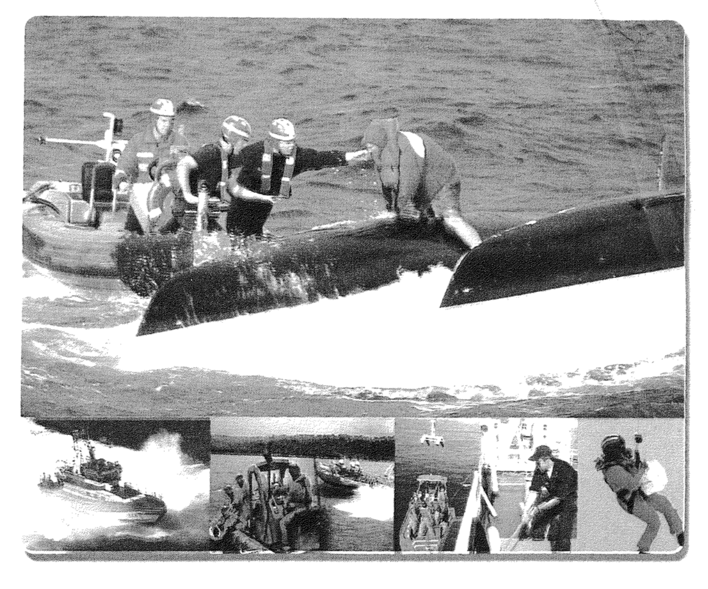
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